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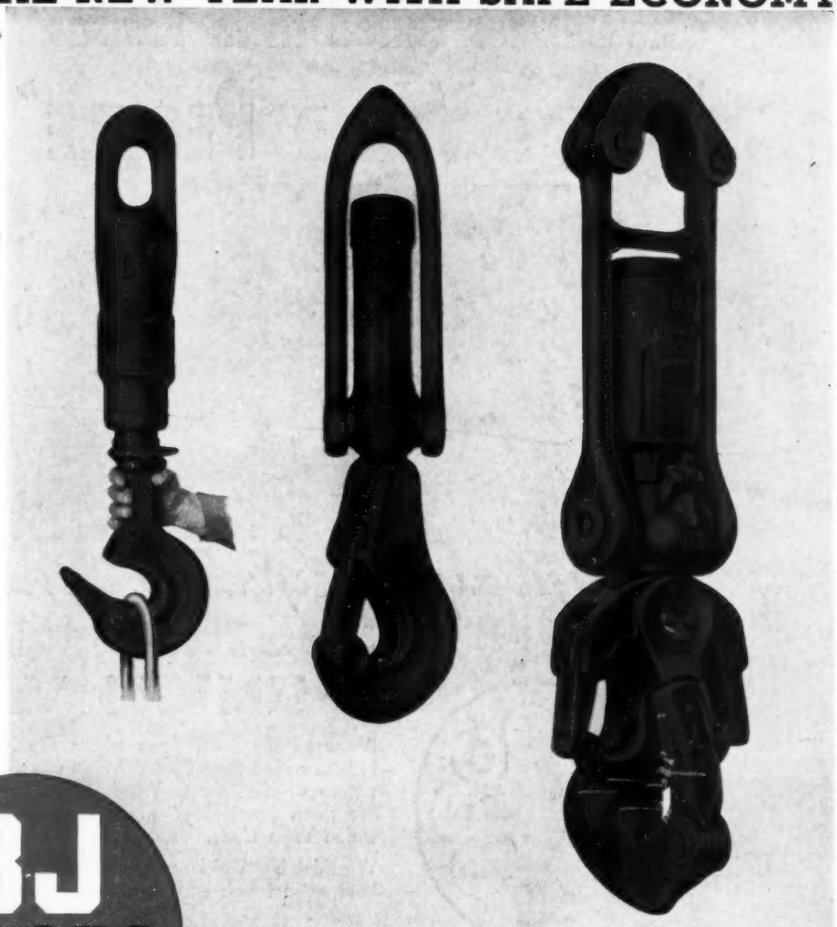

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OIL MAN'S CALENDAR

January

7—New York, Society of Automotive Engineers, annual dinner.

8—Bradford, Pa., National Petroleum Association, Fire and Safety Marshals, Bradford Country Club.

8-10—Milwaukee, Wis., annual convention and Equipment Show of Wisconsin Petroleum Association, Parkinson Hotel.

14-18—Detroit, Mich., Society of Automotive Engineers, annual meeting, Book Cadillac Hotel.

17-18—Minneapolis, Minn., Northwest Petroleum Association, Minnesota division, West Hotel.

February

5-6—Des Moines, Iowa, Iowa Petroleum Association, Hotel Fort Des Moines.

7-8—Louisville, Ky., Kentucky Petroleum Marketers Association.

12-14—Columbus, Ohio, Ohio Petroleum Marketers Association, annual dinner, Deshler-Wallick Hotel.

18-21—New York, Petroleum Division, A.I.M.E. (A.I.M.E. annual meeting).

March

21-23—Wichita, Kans., American Association of Petroleum Geologists, annual meeting.

April

8-13—Houston, Tex., Oil Equipment and Engineering Exposition.

11-13—Dallas, Tex., Petroleum Industry Electrical Association, Baker Hotel.

22—New York American Chemical Society, semiannual meeting.

(?)—Wichita, Kans., Kansas Oil Men's Association.

May

14-16—Tulsa, Okla., American Petroleum Institute, fifth mid-year meeting, Mayo Hotel.

June

20-21—State College, Pa., Pennsylvania Grade Crude Oil Association, annual meeting.

24-28—Detroit, Mich., American Society for Testing Materials, annual meeting, Book Cadillac Hotel.

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● Oil men who make it their business to keep in touch with cementing progress will find unusual interest in the drawing at the right.

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Further Improvement Shown in Producing Branch of Industry With Price Situation Stronger

By ANDREW M. ROWLEY

BETTER conditions prevail in the producing branch of the industry. Increased allowables not only bring a greater return to operators but offer more inducement to wildcatters whose permitted output of discoveries often was so low the operation would require an unusually long time to pay out. While the increase is not sufficient to make a substantial difference in individual well quotas the greater demand for crude oil has encouraged producers and shows the situation very definitely is pointing towards a better and stronger market.

The change in psychology is indicated by the fact a far larger number of operators are losing their reverence for dollar crude and are beginning to realize the rainbow widely publicized by the Federal Oil Administration really should be considered the bottom price level instead of an achievement. In this connection oil men are asking why the Federal Administration is pointing with pride to dollar crude when the investigation of that same organization shows that in every oil producing state in the nation a very substantial part of the crude oil production is being sold at posted prices which are lower than the government figures on the cost of producing that crude.

In other words, a large part of the crude oil being produced and sold in the United States is selling at prices which the Federal Petroleum Administration says, after an extensive investigation, are below the cost of production. The code for the Petroleum industry has a section prohibiting the sale of crude oil at less than the cost of production, Section 6 (a) saying in part "it shall be an act of unfair competition to sell or otherwise dispose of or to buy or otherwise acquire petroleum at a price below the recovery costs of such petroleum as determined by the Federal Agency and approved by the President." While this is in the code, that section has never been enforced or otherwise made effective.

Consumption is being maintained at an exceptionally high level and all indications are requirements of nations abroad will show material increases. These conditions are being reflected in greater activity in field operations in this country. While the number of wells completed during 1934 is nearly 50 per cent greater than the number of completions in 1933, there will be a still further gain next year over this. Pipe line companies realize the situation and are extending and increasing facilities in different active areas.

With such basic improvement being shown there is not left even a semblance of a valid reason for government control. The Administration is reduced to the necessity of harping on Panhandle gas waste but it must be kept in mind Congress meets next week and the oil industry should be prepared to combat actively efforts which will be made to foist a bureaucracy upon the business.

Crude Oil Production in the United States

Estimated daily average production for the week ending December 22, a comparison with previous week and the Federal allowables follow:

	Federal allowable		
Oklahoma—	Dec. 22	Dec. 17	Dec. 15
Oklahoma City	162,075	.....	165,425
Seminole-St. Louis	87,100	.....	89,650
Remainder of State	232,360	.....	231,975
Total Oklahoma	481,535	489,300	487,050
East Texas—			
Lathrop	149,425	.....	145,823
Kilgore	141,740	.....	137,654
Joiner	129,465	.....	127,786
Total East Texas	420,630	.....	411,263
West Texas	135,896	.....	130,984
North Central Texas	90,765	.....	89,447
Texas Panhandle	59,224	.....	58,127
East Central Texas	47,855	.....	46,914
Gulf Coast—Texas	170,237	.....	165,306
Southwest Texas	57,022	.....	55,082
Total State of Texas	981,629	1,006,800	957,123
Kansas	131,800	137,100	126 975
North Louisiana	23,665	.....	23,670
Gulf Coast—Louisiana	84,726	.....	83,012
Total Louisiana	108,391	99,700	106,682
Arkansas	32,935	31,000	31,075
Eastern Fields (except Michigan)	101,500	96,100	103,000
Michigan	28,435	28,100	28,217
Rocky Mountain area	94,000	98,300	96,230
California—			
Santa Fe Springs	38,900	.....	39,100
Long Beach	64,500	.....	65,750
Mountain View	10,000	.....	11,600
Elwood	8,300	.....	9,500
Kettleman Hills	59,400	.....	58,000
Remainder of State	305,900	.....	311,800
Total California	487,000	473,900	495,750
Total United States	2,447,225	2,460,300	2,432,202

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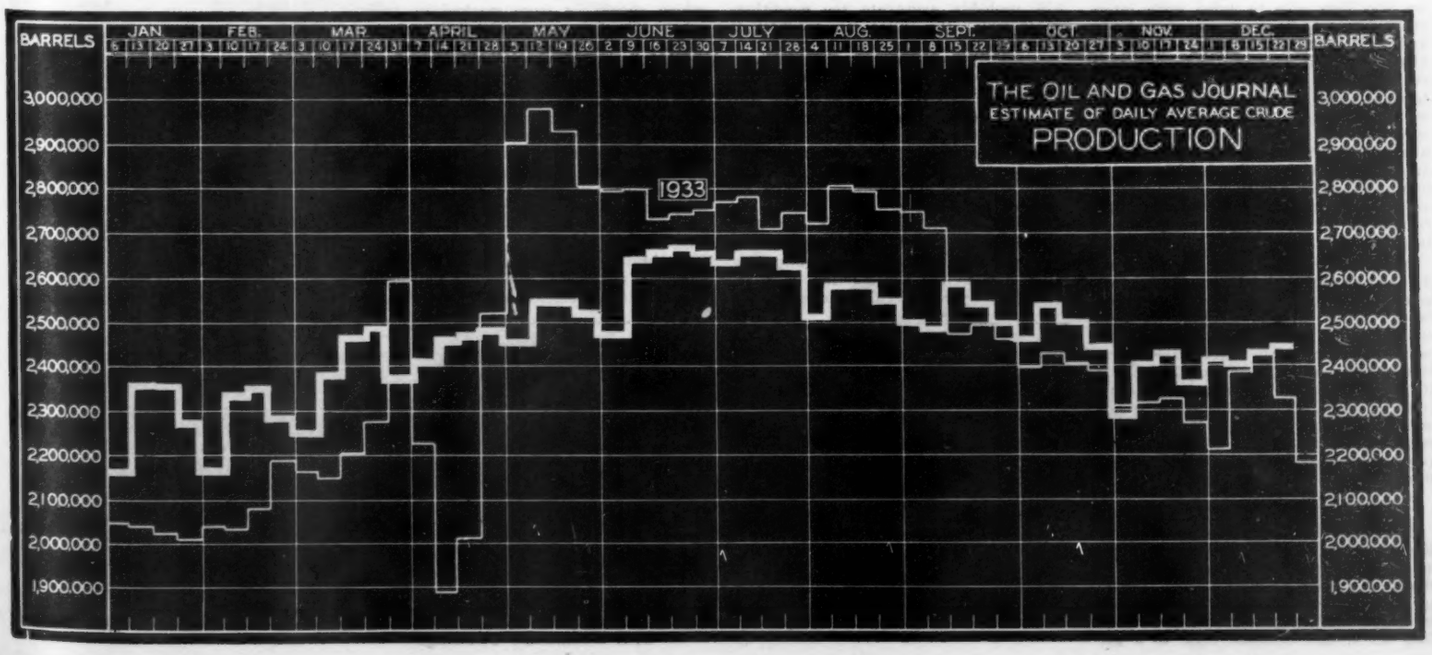


World Oil Consumption Next Year to Rival 1929

By V. R. GARFIAS and R. V. WHETSEL
Foreign Oil Department, Henry L. Doherty & Co., New York

The world's production of petroleum in 1934 will equal, if not surpass the peak output of 1929. Of the 21 most important producing countries, the yield in all but eight will be higher than in any previous year while the output of the American fields will be surpassed only by the peak of 1929.

The world's consumption of petroleum, its products and related fuels will reach a new high figure for the last four years which are those in which world statistics of consumption are available.

The most important happening during the year was the placing in operation of the pipe lines from the Iraq fields to Haifa and Tripoli thus making available to the world's markets this important oil reserve. In 1935 Iraq should outrank Colombia as an oil producer.

United States

The year ends with the lowest volume of crude and refined oils in storage in many years (see Table 1), with consumption mounting to new peaks and production near to actual requirements and commanding prices that assure the average producer some profit. Unfortunately the price of refined products has been disastrously lower than warranted by the crude prices. This maladjustment is largely due to lack of co-operation within the industry, which has again amply demonstrated its inability to co-operate constructively. In fact, at a recent convention the industry was only able to agree upon interstate compacts as a source of stability and this agreement must have been obviously reached with full knowledge that such compacts are unworkable for years to come. This muddling through process will probably continue indefinitely until such time as the unquestionably inadequate oil reserves compel the federal Government to insist on the development of new pools under a system of "unit operation" as being the one step that will correct, at its source, the maladjustment in question.

At the end of the year the Commodity Exchange, of New York, announced their intention to initiate trading in crude oil and gasoline on February 5th of 1935. The industry will no doubt watch with interest the operation of this new agency, particularly if it results in stabilizing price fluctuations of crude and gasoline more in line with actual conditions and if it helps to establish a reasonable differential between the prices of crude oil and gasoline.

Table 1
STOCKS AT END OF YEAR
(In thousands of barrels)

	Crude(a)	Motor fuel(b)	Fuel oil	Misc.	Total
1931	370,919	56,171	135,856	58,727	621,673
1932	339,715	53,805	129,881	66,705	590,106
1933	355,312	55,933	123,500	68,462	603,207
1934(c)	340,000	50,000	110,000	66,000	566,000

(a) Excludes California below 20 degrees.
(b) Excludes unfinished gasoline.
(c) Estimated; other figures from U. S. B. of M.

Iraq

Pumping of the Iraq oil from the Kirkuk Field started about the middle of the year on the northern line and the first tanker shipment from Tripoli to the refinery at Le Havre took place in August. The crude has a gravity of 35.5 A.P.I. and contains close to 2 per cent of sulphur. In its refining qualities it is similar to the Michigan and Crane-Upton crudes in the United States.

The Tripoli line is 531 miles long while the line to Haifa is 87 miles longer, being capable of transporting about 40,000 bbls. daily each. It is estimated that the Tripoli line can now operate to full capacity and that the Haifa line will reach capacity some time next April. During 1935 some 25,000,000 of Iraq oil will find their way to the world's markets principally in Europe and some readjustment of trade routes will thereby be inevitable.

Rumania

The oil industry in Rumania has been further demoralized owing to overproduction, government restrictions, and currency regulations. It should be noted that almost 80 per cent of the Rumanian production is exported and that the currencies secured from these exports furnish one of the principal sources of foreign exchange to the Rumanian Government. These exchange operations controlled by the government, the high freight rates in the government owned railways for petroleum and its products from the fields to tidewater coupled with overproduction at home and oversupply abroad have placed the Rumanian oil producer and exporter in a very precarious condition.

The increasing availability of Iraq oil will probably aggravate the conditions under which the Rumanian producer is now working.

Japan and Manchukuo

The Japanese Diet enacted a law providing for the government control of the petroleum industry through a licensing system for imports and refining, which became effective on July 1st. The law provides for a six months' storage reserve of oil imports.

Later in the year, Japanese controlled Manchukuo created an oil monopoly and a company, subsidized by the Japanese Navy, started the construction of a refinery at Dairen. This monopoly has been the subject of diplomatic discussion between Great Britain, the United States and Japan, the outcome of which is yet in doubt. In this connection, it should be remembered, that in order to supply the needs of Japan and Manchukuo the crude is now imported preferably from the Far Eastern fields which are controlled by the same English and American interests now marketing their products in Japan and Manchukuo.

Bahrein Island

The first tanker load from Bahrein Island arrived in San Francisco, Cal., on October of this year, consigned to the Standard Oil of Cal., which owns the Bahrein concession covering the entire island with an approximate area of about 215 square miles. The oil has a gravity of 33 A.P.I. and is somewhat similar to the Persian crude. Other concessions have been granted to English and British interests in the neighboring mainland of Arabia and exploratory drilling is to be expected in the near future.

A well was brought in at Tselfat near Petitjean in French Morrocco and soon was ruined by fire. Additional drilling is now being carried on in the immediate vicinity, the structure of which is considerably disturbed thus making the possibilities of a large producing area problematic.

The largest refinery in France was put in operation in 1934 with a capacity of 18,000 bbls. or about one-fifth of the combined capacity of the other French plants. This added refining capacity has resulted in a decline of imports of refined products and an increase of crude imports, a condition which should be more marked in 1935 when the Iraq crude is delivered to Tripoli at the rate of 40,000 bbls. daily.

The production in Trinidad is the largest within the British Empire. The legislature of the island has urged the Home Government to grant preference to the oil products produced within the Empire. It should be noted that petroleum products produced in the British Domain or Colonies are now admitted duty free in Canada where crude oil from any source is likewise admitted free.

In Mexico the operation of the government sponsored company, Petromex (Compania de Petroleos de Mexico, S.A.), under the new administration which took office December 1 will be followed with great interest by the oil companies doing business in Mexico. The government owns all of Class "A" stock, aggregating 50 per cent of the capital stock, and blocks of Class "B" stock, which can be acquired only by Mexican citizens, are now owned by the Mexican Railroads (the largest consumer of petroleum products in Mexico) and some influential interests close to the administration.

Tables 2 and 3 show the figures of production and consumption for 1933 and estimates for 1934.

Table 2
WORLD PRODUCTION OF PEROLEUM AND RELATED FUELS
(Thousands of barrels)

	1933 Crude petroleum	1933 Natural gasoline, benzol, etc.	1933 Total	1934 Crude petroleum	1934 Natural gasoline, benzol, etc.	1934 Total
United States	898,874	35,083	933,957	908,000	36,700	944,700
Russia	147,077	660	147,737	166,000	750	166,750
Venezuela	120,882	460	121,342	139,000	600	139,600
Rumania	50,971	850	51,821	60,000	1,000	61,000
Persia	49,581	800	50,381	52,000	850	52,850
Dutch East Indies	38,513	1,600	40,113	41,800	1,700	43,500
Mexico	33,906	382	34,287	37,000	450	37,450
Colombia	13,157	380	13,537	17,000	400	17,400
Argentina	13,955	220	14,175	14,100	250	14,350
Peru	13,925	920	14,845	14,000	1,000	15,000
Trinidad	9,560	90	9,650	10,900	100	11,000
British India	8,543	110	8,653	8,800	100	8,900
Iraq	1,200	...	1,200	4,000	...	4,000
Poland	3,865	501	4,366	3,600	400	4,000
Sakhalin	2,600	...	2,600	2,600	...	2,600
Sarawak	2,288	50	2,338	2,000	50	2,050
Japan	1,935	110	2,045	2,000	120	2,120
Germany	1,731	3,159	4,880	2,100	3,100	5,200
Ecuador	1,623	...	1,623	1,800	...	1,800
Egypt	1,591	41	1,632	1,450	50	1,500
Canada	194	953	1,147	240	1,110	1,350
Others	907	3,892	4,799	1,600	3,700	5,300
	1,416,867	50,261	1,467,128	1,469,990	52,430	1,542,420

Table 3
CONSUMPTION OF PETROLEUM, ITS PRODUCTS AND RELATED FUELS
(In Thousands of Barrels)

	1933	1934
United States	865,447	900,000
Russia	95,500	97,000
United Kingdom	66,903	73,500
France	37,059	39,000
Canada	31,471	34,000
Germany	23,537	27,000
Argentina	20,700	21,400
Japan	15,190	16,500
Mexico	14,535	15,000
Rumania	13,886	14,500
British India	12,660	12,900
Italy	12,612	13,100
Dutch East Indies	10,100	10,300
Australia	10,000	10,300
Persia	8,855	9,000
Dutch West Indies	8,100	8,700
China	7,745	8,100
Holland	7,311	7,700
Sweden	6,062	6,200
Venezuela	5,900	6,400
Spain	5,431	5,300
Egypt	5,380	5,300
Brazil	4,434	4,600
Denmark	4,340	4,500
Belgium	4,220	4,300
Cuba	3,589	3,600
Union of South Africa	3,467	3,600
Norway	3,371	3,450
Philippine Islands	3,351	3,400
Czechoslavakia	3,220	3,400
Switzerland	3,010	3,140
Poland	2,810	2,800
Hawaii	2,762	2,820
New Zealand	2,592	2,670
British Malay	2,440	2,300
Trinidad	2,327	2,480
Uruguay	2,250	2,300
Chile	1,984	2,100
Algeria	1,952	2,150
Panama Canal Zone	1,921	2,100
Austria	1,920	2,000
Iraq	1,881	2,300
Irish Free State	1,838	1,790
Hungary	1,408	1,500
Greece	1,388	1,490
Peru	1,350	1,400
Porto Rico	1,353	1,380
Portugal	1,138	1,150
Finland	1,012	1,100
French Morrocco	981	1,000
Others	25,607	26,500
Total	1,378,650	1,428,020

General view of Negritos camp of the International Petroleum Co. Ltd., in Peru. Peruvian school in foreground with workmen's dwellings

Quit While You Can

—Drawn exclusively for The Oil and Gas Journal

Ickes Again Threatens to Declare Petroleum Industry Public Utility

By HUGH D. MALLON
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Dec. 24.—While the Planning and Coordination Committee was affirming proposed legislation giving authority to the federal Government to control production of crude oil, Administrator Ickes was reiterating and amplifying his statement made in Dallas that the federal authorities might declare the oil industry to be a public utility.

The administrator's remarks, drawn from him at a press conference, were to the effect that unless the industry immediately took steps to get its house in order the Government would take the competition out of the business by declaring it to be subject to the rules and regulations of a Washington bureau, preferably the Department of the Interior. Speaking of the gas situation in the Texas Panhandle, he said: "Unless the states and the industry can control this unparalleled waste the federal Government owes a moral obligation to the people to control the industry." No other instance of waste has been raised by the administrator.

He said further that it was his opinion that the Government might be forced to assume this attitude if the governors' conference on January 3 did not arrive at an agreement on a feasible and enforceable interstate compact. It is the administrator's opinion that the industry should be declared a public utility anyhow, since petroleum is an irreplaceable natural resource, and is absolutely essential to the continued welfare of the country.

Would Control All Branches

That it is his intention, if the public utility plan is put forward, to control not only production, but all branches of the industry was brought out by the questioning. Asked if marketing, refining and transportation would also be declared endowed with a national public interest and declared to be public utilities, the administrator answered: "You wouldn't declare a street car roadbed a public utility and not the rolling stock, would you?" He continued with the statement that all branches of the industry might be so declared.

At the present time, and under present state laws the administrator claims that no interstate compacts would, or could, be enforced. He has said that such an agreement, under existing state laws would not be worth the paper on which it is printed. This conclusion is based solely, apparently, on the fact that in the Texas Panhandle the "stripper law" which permits the extraction of natural gasoline from natural gas with the consequent loss of the gas residuum, entails a considerable loss of natural gas. This conclusion is reached, regardless of the fact that to put this gas to any commercial use would not be economically possible.

Meanwhile it has been learned that the next meeting of the governors, scheduled for January 3, will probably bring concrete results. The governor-elect of Texas, James V. Allred, is said to be nearer an agreement with the governors of the other oil producing states than previously. Faced with the possibility of a rigid federal control of the industry it is understood the various state authorities are now ready to go forward with plans for an interstate compact among the various states that is designed to protect the oil resources of each state.

A step forward has been taken, it has been stated, which will probably place Administrator Ickes' opinions in the background. An enforceable interstate compact would necessitate the promulgation by each state of adequate conservation laws, it is claimed, and such a procedure would nullify the contention of the administrator.

Great credence is lent to this report as rumors, from reliable sources, are that Ralph Horween, recently appointed executive assistant to Administrator Ickes, will resign effective February 1, and that other resignations from the Petroleum Administrative Board are imminent. Notable among those who it is rumored will resign is Dr. John W. Frey, who prior to his appointment to the Petroleum Administrative Board was chief of the minerals division of the Bureau of Foreign and Domestic Commerce of the Department of Commerce.

Fear that the action of the Planning and Coordination Committee in recommending that legislation granting to the federal Government authority to regulate commerce in petroleum and its products might result in legislation along those lines might be unfounded. The Cole investigating committee has asked practically everybody interested in the subject as a collective group to submit to it their panaceas for the evils that beset the industry. It is known that advocates of interstate compacts, quotas in commerce, production control and unit operation of oil fields have been invited to submit to the committee their own ideas on the control of the industry.

Vote by P. and C. Committee

The vote on the compromise legislation, which the Planning and Coordinatios Committee recommended to the Cole committee has been released. The vote shows that Amos L. Beaty, director of the Phillips Petroleum Co. and chairman of the Planning and Coordination Committee; J. D. Collett, president of the Mid-Continent Oil & Gas Association and chairman-elect of the P. and C. Committee; Henry M. Dawes, of the Pure Oil Co.; Wirt Franklin, president of the Wirt Franklin Petroleum Corp.; B. L. Majewski, of the Deep Rock Oil Corp.; I. A. O'Shaughnessy, Globe Oil & Refining Corp.; Charles F. Roeser, of Roeser & Pendleton at Fort Worth; John E. Shatford, of the Louisiana-Arkansas Refiners Association; Wilmer R. Schuh, of the National Petroleum Retailers Association, and Ralph T. Zook, of Sloan & Zook, were all in favor of federal control of the industry.

Those not in favor of such legislation were C. B. Ames, of the Texas Co.; Axtell J. Byles, president of the American Petroleum Institute; F. R. Coates, of the Cities Service Co.; W. T. Holliday, of the Standard Oil Co. of Ohio; E. B. Reeser, of the Barnsdall Oil Co.; W. J. Reid, of Hancock Oil Co.; E. G. Seubert, of the Standard Oil Co. of Indiana; Walter C. Teagle, of the Standard Oil Co. (New Jersey), and A. E. Watts, of the Consolidated Oil Corp.

The close vote of the committee will undoubtedly have some influence on the decision reached by the Cole committee, as it is known that the committee is not exactly averse to interstate compacts.

Regardless of the outcome of the governors' conference on January 3 it is freely predicted among members of the industry here that the report of the Cole committee will not include anything more drastic than an enlargement on the Connally amendment to the National Industrial Recovery Act, Section 9 (c). It is recognized generally that such legislation must be enacted in order to stabilize and, to a certain extent control. the industry.

Cole Report Unanimous

Since the vote by the Planning and Coordination Committee was taken, it has been learned that the investigating committee has prepared its report. It is understood that the report is a unanimous one, and that there will be no minority report, and no subsequent report on the subject investigated.

In as much as only one member of the committee favored any legislation to divorce pipe lines, the majority of the committee not fostering any particular regulation or control of pipe line, it is reasonably certain that no action on the subject of pipe lines will be recommended by this committee.

Independent action by members of congress, however, is not precluded by this report. It is known that some members of both the House and the Senate would support this type of legislation, so the possibility of the introduction of legislation of this type at the next session of congress is not unlikely.

A tax survey has been ordered by President Roosevelt to consider the overlapping of various state, municipal, county and federal taxes. A report on this matter, it was explained by Secretary of the Treasury Morgenthau, is expected to be handed in by the experts appointed to investigate and report on the subject at the national tax conference which is to be held here next summer.

The gasoline tax, it was pointed out by Secretary of the Treasury Morgenthau, is a striking example of overlapping of taxes. He intimated that the position which Representative Treadway, Republican of Massachusetts, has consistently maintained, might be adopted. Representative Treadway has for years claimed that the gasoline tax should be levied and collected by one central taxing agent and distributed to the various localities and communities by this agency.

This system, it is claimed by its sponsors, would eliminate, to a great extent, the diversion of the gasoline tax to uses not visualized when the tax was levied. It would put a stop to the use of gasoline tax funds for the building of municipal power plants, schools, etc., and would also materially decrease the amount now being paid in taxes in several of the states.

Six Steps Are Necessary in Calculating the National Crude Oil Allowable

By HUGH D. MALLON

WASHINGTON, D. C., Dec. 24.—Six major steps necessary in the accurate method by which the oil administration arrives at the national crude oil allowable each month were outlined today by Oil Administrator Harold L. Ickes, with emphasis that the fundamental considerations were:

1. Conserving the country's supply of vital fuel.
2. Providing an equitable distribution among the producing states of the production necessary to meet consumer demand.
3. Stability in the industry so that an excessive outpouring of oil will not be permitted to break down the economic structure or waste the reserves.
4. A careful statistical valuation and study of the demand based upon accurate mathematical and economic data.

To facilitate forecasting the consumptive demand and working out the production which will be required, the country has been divided into several geographic districts by the Bureau of Mines, which assists the Petroleum Administrative Board in preparing the estimates.

The national total of necessary crude oil production is estimated and divided among the states by a method involving the following factors:

1. Gasoline demand by districts.
2. Gasoline supply for each district sufficient to meet its demand.
3. Refinery crude required in each district.
4. Imports of crude by districts.
5. Distribution among the producing states of crude for refining.
6. Exports, fuel and losses of crude by states.

The first step involves estimating the

(Continued on Page 50)

Magnolia Places New Solvent Unit at Beaumont Plant on Full Schedule

By NEIL WILLIAMS
Gulf Coast Bureau, The Oil and Gas Journal

Manoglia Petroleum Co.'s new Duo Sol plant for the treatment of charging stock used in the refining of lubricating oils has been in full operation the past month at its Beaumont, Tex., refinery. The plant, the process of which involves the segregation of the paraffinic, or desirable hydrocarbons from the naphthenic elements by the action of two selective solvents in countercurrent contact extraction, so far has met with more than satisfactory results. On regular operation it now is turning out an oil, the finished dewaxed product from which not only meets but surpasses the most rigid specifications of modern lubricating oil requirements.

Installation of the plant is a reflection of Magnolia Petroleum Co.'s practice of providing the latest refinery methods and equipment, and stands as an achievement of refinery engineering on the part of the Magnolia engineering and operating personnel, who, in conjunction with engineers of Max B. Miller & Co., licensors of the process, built the full-sized 2,000-bbl. unit from a 3-bbl. pilot plant. No major operating trouble has been experienced, and since it was started up last September the plant has not been shut down except for changes or leaks. The unit is in the hands of a completely trained staff of operators, who were given an extended course of instruction in all phases of the process, plant construction and operation before the unit was started up.

With the exception of a little Ranger crude stock, the plant has been running entirely on Oklahoma crude residuum although after the first of the year the processing of other stocks will be undertaken. Specifications of the Oklahoma residuum follow:

Gravity, deg. A.P.I.	25.5
Flash, deg. F.	470
Viscosity at 210 deg.	105
Pour, deg. F.	85
V.G.C.	0.844

This residuum is obtained by the reduction of the Oklahoma crude in continuous processing to about 31 per cent bottoms.

Present operation of the plant is based on a charge of 27,200 pounds per hour (2,030 bbls. daily) of this reduced crude with 88,000 pounds of paraffinic solvent (propane) and 104,000 pounds of naphthenic solvent per hour. The propane represents approximately 325 per cent of the crude residuum charged while the naphthenic solvent is about 380 per cent. The latter consists of Cresylic or tar acids with a minimum of 35 per cent phenol, this being known as No. 2 Selecto. No. 1 Selecto, containing 17 per cent phenol, originally was tried out in the process at the Socony-Vacuum plant at Paulsboro, N. J., but that had a critical solution temperature of 15 degrees less than with the No. 2 acid.

With the above proportions of the respective solvents and the present charging stock, a finished dewaxed 0.8035 V.G.C. oil having 100 viscosity index is being produced. The ratio between propane and Selecto has a sharp effect on the product. Increased propane improves the color but affects the viscosity index and V.G.C. adversely; consequently a proper balance must be determined, this to depend on the characteristics of the charging stock.

A recovery of 76 per cent paraffinic oil and 24 per cent naphthenic oil is being obtained in Magnolia's Duo Sol plant operation. Specifications of these recovered oils follow:

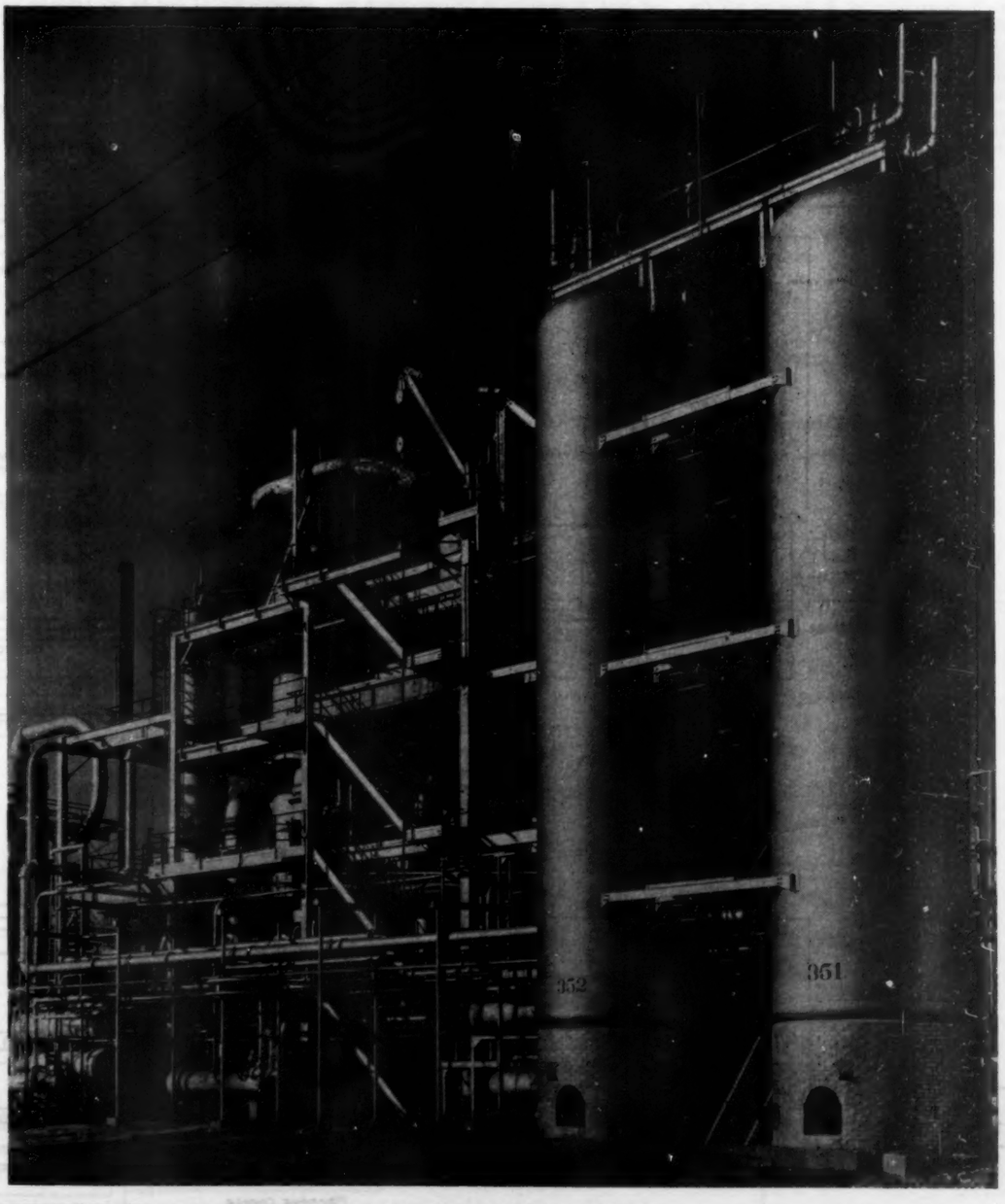
	Paraffinic	Naphthenic
Gravity, deg.	29.6	7.0
Flash, °F.	460	....
Pour, °F.	100	....
Vis. at 210° F.	71	....
Vis. (Furol) at 212° F.	....	133
V.G.C.	0.800	....
Color N.P.A.	8	....
Per cent acid	.08	.03

The paraffinic oil, processed and dewaxed in the conventional method at the Beaumont refinery, namely the Sharples centrifuge, yields a finished dewaxed oil showing the following tests:

Gravity, deg. A.P.I.	29.0
Flash, °F.	450
Fire, °F.	515
Vis. at 100° F.	658
Vis. at 210° F.	74
V.I.	100
Color	Dark 5
Pour, °F.	0-20
V.G.C.	0.8035
Conrad carbon	0.20

Treating and mixing of the oil with the two liquid solvents in the Duo Sol process take place in what are known as the extractors, designated in the accompanying flow diagram for the Magnolia Petroleum Co. installation as Extractor E-1 and Extractor E-2. The paraffinic hydrocarbons go into solution with the paraffinic solvent and the tar or naphthenic components go into solution with the naphthenic solvent, these forming two layers, the upper or paraffinic layer, and the lower or naphthenic layer. This is accomplished in nine stages, represented by as many compartments or pots in the two extractors. The two layers are moved in opposite directions through the successive stages and through the extractors, the naphthenic layer being pumped backward stage by stage and out the bottom of the first compartment into the naphthenic oil rectifier system, while the paraffinic layer flows upward and forward through the states of extraction and out the top of the last compartment (No. 9) into the paraffinic oil rectifier system.

It is well to divert slightly to describe the extractors. Extractor E-1 is a horizontal tank, 75 feet long, with four compartments separated by plates. Compartments 1 and 2 are 15 feet long each; Compartment 3 is 25 feet long, and Compartment 4 is 20 feet. Extractor E-2 is 60 feet long with five equal length (12 feet) compartments. Two extractor tanks are provided only because of their length as the movement of the two layers is



General view of Magnolia Petroleum Co.'s new Duo-Sol unit at its Beaumont, Texas refinery

continuous through all nine compartments. The compartment partition plates are provided with special openings and connections permitting the pumping of the naphthenic layer from one pot to the other, and in turn the flow of the paraffinic oil from one to the other. In the accompanying flow diagram, the naphthenic layer is pumped into the respective compartments through jets in the compartment bulkheads. It was found that the velocity of the fluid entering the compartments through such jets was so great as to disturb and prevent efficient separation of the parafinnic and naphthenic components. The jets now have been replaced by pipe coils and a weir box, and now the oil must flow the full length of a compartment and back again before discharging into its respective compartment.

Introduce Propane

The fresh propane paraffinic solvent is injected into the system at the front end of Compartment 1, Extractor E-1, where it contacts the final naphthenic layer. Reversely, the fresh Selecto charge is injected into Compartment 9, Extractor E-2, where it contacts the final paraffinic layer. The charging stock is pumped into the front end of Compartment 3. Because of this compartment handling the fresh charge, the paraffinic layer of Compartment 2 is not flowed directly into this compartment as is done in all the other stages, but rather is removed through a line out the top of Compartment 2 and recycled with the fresh charge into Compartment 3. The recycle and fresh charge come together in a mixer and then are passed through a flash type vacuum refrigeration unit for chilling before entering the extractor.

In the movement of the two layers through the extractors, the upper layer becomes increasingly paraffinic in the successive stages as the naphthenic elements are washed and settled out; vice versa, the lower layer loses more and more of its paraffinic fractions. The following table shows the progressive changes which take place in the paraffinic layer in its flow through the extractor:

Pot No.	Temp. (deg. F.)	Gravity (A.P.I.)	Vis. at (210°)	V.G.C.
1	85	21.2	103	0.855
2	90	24.5	94	0.832
3	90	25.8	83	0.8245
4	90	25.7	89	0.824
5	86	27.1	76	0.817
6	85	28.8	74	0.805
7	83	29.3	74	0.8015
8	83	29.8	72	0.7985
9	78	29.7	77	0.798

The rectifying systems for the recovery of the solvents from the respective naphthenic and paraffinic oils are substantially the same as far as processing is concerned. However, first it might be well to describe the recovery of solvents from the naphthenic layer. This can be followed by reference to the accompanying diagram.

The final naphthenic layer discharged from the bottom of Compartment 1 contains the following percentages by weight: Propane, 20 per cent; Selecto, 74 per cent, and tar (naphthenic elements), 6 per cent. A pressure of 285 pounds is required to get the charge out of Compartment 1 and into the first naphthenic evaporator (N-1), which operates under high pressure. The pressure in the compartment is controlled by the vapor pressure of propane in the propane work tank (P-5). The feed to N-1 is split, part going direct into the evaporator at 83 degrees temperature and the other part passing through heat exchanges (No. 10) where it is preheated from 83 degrees to 260 degrees by the hot Selecto bottoms from the water evaporator (W-1). The evaporator operates at a pressure of 190 pounds. A steam reboiler on the tower having an outlet temperature of 325 degrees facilitates stripping of the propane. A temperature of 150 degrees is maintained at the top of the tower. The vaporized propane passes through a condenser (No. 1) along with the overhead from the equivalent tower (P-1) of the paraffinic system. Noncondensable gas is taken into the refinery gas line while the liquid propane flows to the propane work tank (P-5). Approximately 86 per cent of the propane by weight is recovered.

Propane Fractionator

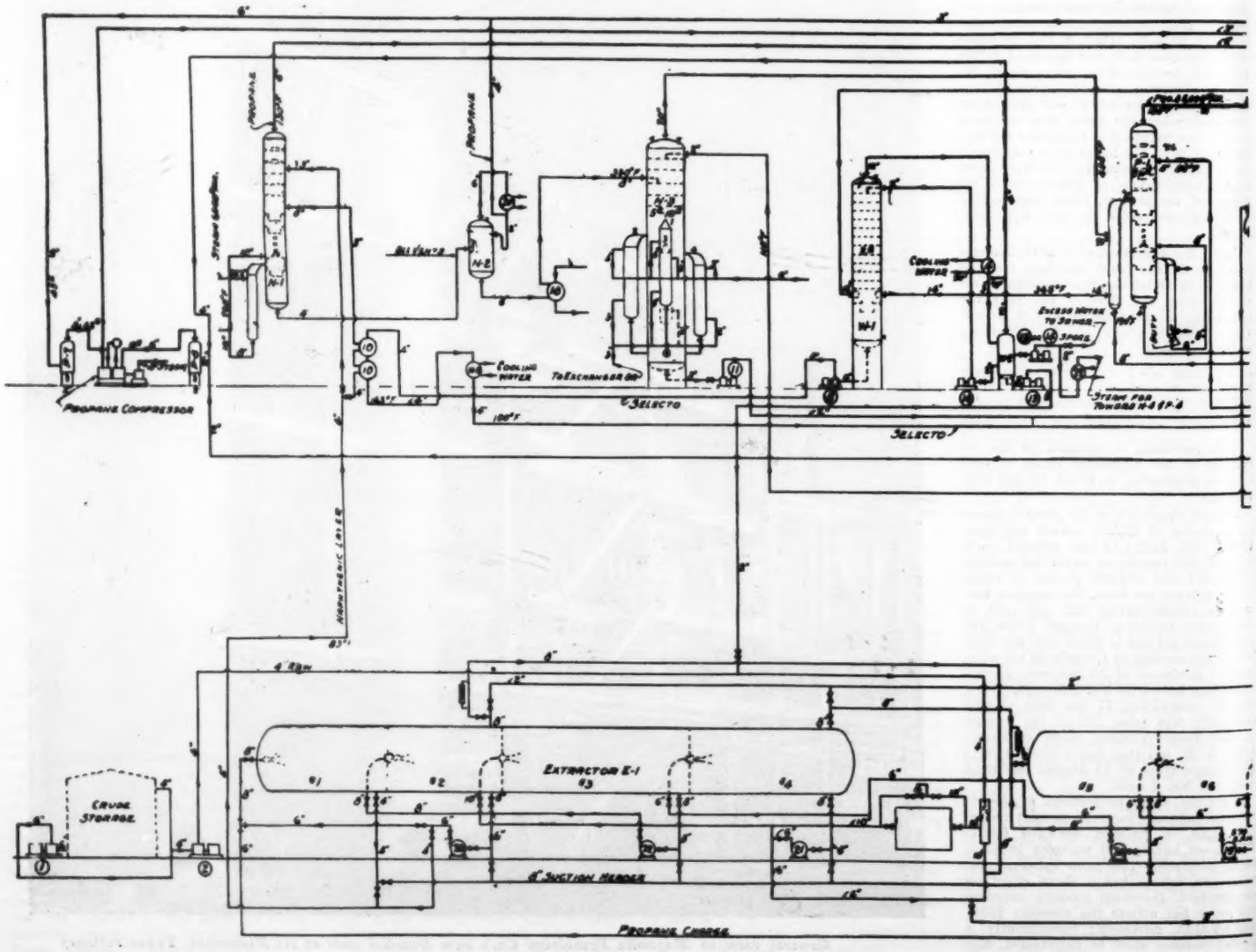
Bottoms from N-1 flow into a small propane flash evaporator (N-2) which serves as an expansion chamber where the pressure of the N-1 bottoms is reduced from 190 to around 45 pounds. An additional 12½ per cent of propane is stripped off here, this going overhead to a propane suction trap (P-7), through a water cooler where the temperature is reduced from 315 degrees to 110 degrees, and thence to a compressor which raises the pressure to 200 pounds and from where the vapor is run through a condenser (No. 1) and to the propane work tank. The bottoms flow through a 125-pound steam preheater (No. 18), in which the temperature is boosted to 330 degrees, and thence into the main Selecto evaporator (N-3).

In N-3, the stream drops over three trays and then through a succession of four reboilers, or heating bundles, in parallel. These bundles are placed with each successive one being a little lower than the one ahead of it, permitting the hot oil to thermosyphon over the top of each bundle into the next lower one. In this process the oil is heated with 385 pounds saturated steam which has a temperature of 444 degrees and it is possible to maintain a temperature of 435 degrees on bottom. Pressure in this is 5 pounds gauge. The only reflux is due to feed of 330 degrees and condensed overhead from N-4, the naphthenic vacuum tower. Overhead from N-3 is used to preheat the feed into the propane evaporator (P-1). Bottoms are pumped directly into N-4.

Lummus Furnace

The latter tower has a pan about one-third way up from bottom, on which suction is taken, the oil passing through a Lummus gas fired furnace, which heats the oil to 600 degrees. The same furnace also contains a coil which serves as the heater for the corresponding paraffinic vacuum tower (P-4). The tower operates at absolute pressure of 40 millimeters (720 millimeters vacuum). A small amount of stripping steam is used in the bottom of this tower.

Overhead from N-4, consisting of Selecto vapors and steam, passes through a condenser (No. 2), thence through a small after-cooler chilled by water from the refrigeration unit, and thence to a reflux receiver (N-6). Overhead from the cooler is used either as reflux for the naphthenic evaporator N-3 or the vacuum tower N-4. Bottoms from this tower are taken off at a temperature of 525 degrees and pass through a coil cooler (No. 6) to naphthenic oil storage. So efficient is the stripping of Selecto in the



system that the Selecto content of this recovered naphthenic oil is less than a tenth of 1 per cent by weight.

Operation of the paraffinic oil rectifier system is almost the same as that of the naphthenic system. The final paraffinic layer is discharged from the top of Compartment 9, Extractor E-2, into the propane evaporator (P-1). Part of this stock, which leaves the compartment around 85 degrees, is preheated, first to around 120 degrees in exchanger No. 17 by bottoms from P-2 (the paraffinic pressure reducing tower), and then to 290 degrees in a preheater using N-3 overhead (Selecto vapor) as the agent. The remainder of the stock is used as cold reflux. Regulation of the amount of cold reflux and the amount of preheated feed to the propane evaporator controls the heat balance maintained on the water evaporator, to be explained later.

Paraffinic Fraction

The paraffinic propane evaporator operates at the same pressure and temperature as the equivalent tower of the naphthenic system, and the vaporized propane overhead is passed through the same condenser. Bottoms of the tower are discharged into the flash evaporator (P-2). Overhead from the latter is taken by propane suction traps and the compressor the same as vapors from N-2. Bottoms of the tower, after partially preheating the feed to the propane evaporator in exchanger No. 17, are taken through a water cooler (No. 7), where they are cooled to 150 degrees, and then into an accumulator tank (E-3). The latter serves as a buffer to regulate the volume of fluid going into the paraffinic tower (P-3). It originally was intended that a level be maintained on E-3 but in actual operation this is not being found necessary. Instead, approximately 5,000 pounds of fluid is being drawn off hourly and pumped into Compartment 8 of Extractor E-2. The top fluid of E-3 is discharged through two preheaters (Nos. 8-b and S-a), where it is raised in temperature to 410 degrees and discharged into the paraffinic tower P-3. Preheater 8-a is heated with 385 pounds steam condensate from the reboiler of N-3, and 8-b is heated with 125 pounds steam condensate. A small amount of stripping steam is injected into the bottom of the tower to aid in the distillation of the Selecto.

Water Evaporator

Overhead of P-3 passes out as a vapor at 355 degrees temperature into the water evaporator (W-1). The P-3 bottoms with a temperature of 375 degrees and pressure of 5 pounds gauge are pumped through an exchanger (No. 19), in which the temperature is increased to 450 degrees by the hot paraffinic oil bottoms from the Selecto vacuum evaporator (P-4), and then into the P-4 tower. This tower, like its naphthenic system equivalent, has a pan about one-third way up on which suction is taken and the oil cycled through the Lummus gas-fired furnace. A heater discharge temperature of 550 degrees is maintained with the temperature of the bottom of the tower at 510 degrees. The tower operates with absolute pressure of 40 millimeters. The paraffinic oil bottoms with a Selecto content of less than one-tenth of 1 per cent, after exchanging heat with the feed into the tower, are run through the coil cooler (No. 21) to the paraffinic oil storage. Overhead is taken through a cooler (No. 3), then an after-cooler chilled by water from the refrigeration unit, and to the reflux receiver (P-6). The overhead product in P-6 has a flow similar to the overhead product from N-4.

The water evaporator (W-1) into which the overhead from P-3 and N-3 is discharged, operates at a pressure of 2 pounds gauge with a temperature of 360 degrees on bottom and 215 degrees on top. The content of the charge consists of a small amount of propane, some stripping steam as water, and Selecto. The propane and water go overhead as vapors through a cooler (No. 4) and into an accumulator (W-2). The noncondensible material leaving overhead is picked up in an entrainment trap (P-8) and then by the propane compressor, from where it is run through coolers to the propane work tank. This compressor is of the two stage type and is the same one which picks up the overhead from N-2 and P-2. The overhead from W-2 is taken by the low stage side while the overhead from the other towers is taken by the high stage side.

Part of the water condensed in W-2 is returned as reflux to the top of the water evaporator and the remainder is taken by a small boiler for generating steam used in stripping and for other purposes. The bottoms, consisting of anhydrous Selecto, are run back into the system. The heat balance on this tower, as previously mentioned, is maintained by regulating the amount of feed through the Selecto preheater on the first paraffinic evaporator tower.

Because time, temperature, pressure and concentration are of vital importance in the Duo Sol process, the installation necessitates the use of an unusually large number of instruments which are grouped into two central control boards. Operation of the plant is entirely automatic and proper functioning of the entire system is dependent on the instruments.

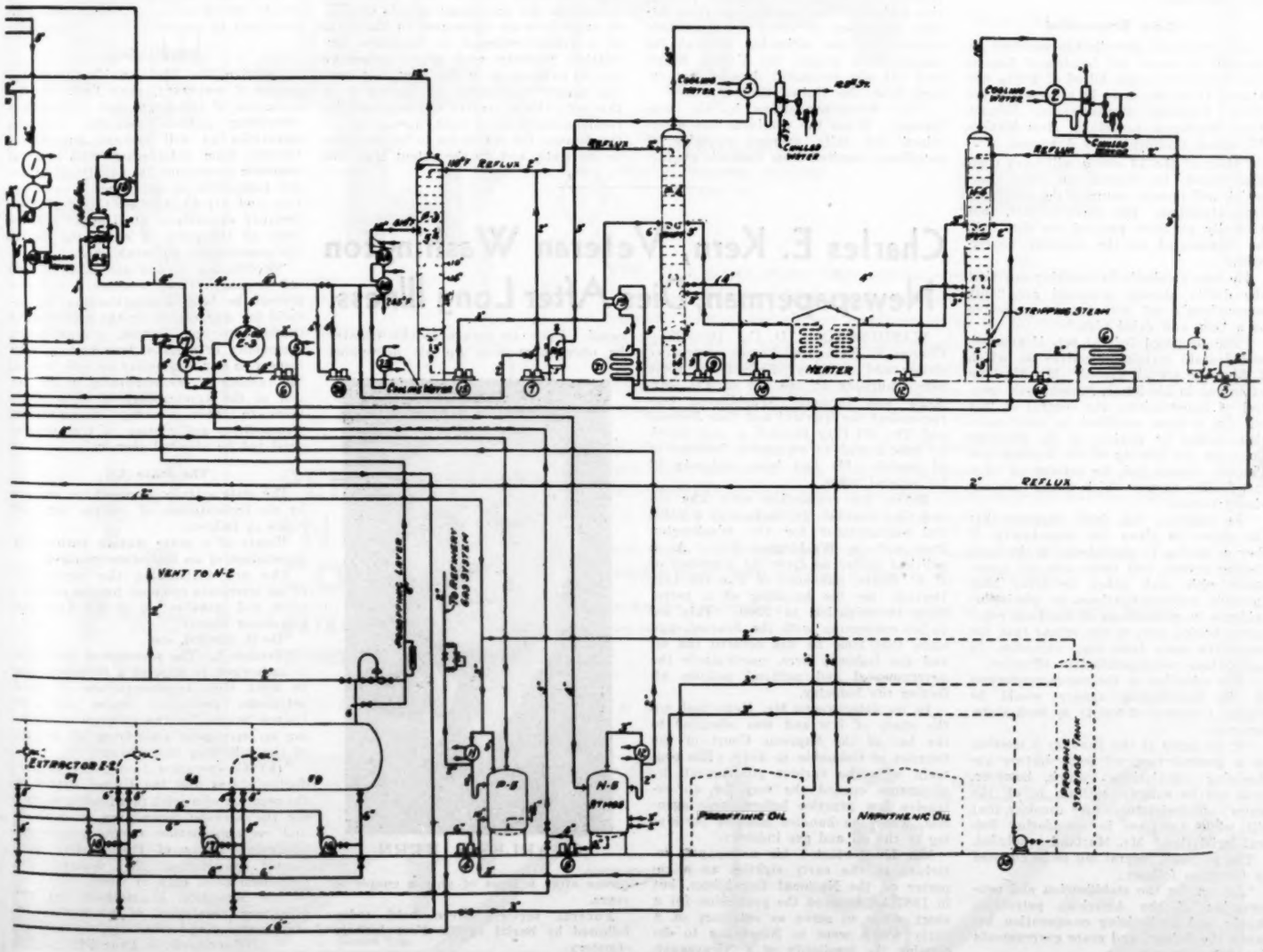
The Duo Sol installation at the Magnolia Petroleum Co.'s Beaumont plant is the second for the Socony-Vacuum group, the other being at the Paulsboro, N. J., plant of the Socony-Vacuum Oil Co., Inc.

Cannot Sell Refinery for State Gasoline Tax

NEW ORLEANS, La., Dec. 22.—A decision of paramount importance to the State of Texas not only involving a bankruptcy status but also the rules of comity between state and federal courts, has been handed down by the Fifth U. S. Circuit Court of Appeals in the case of the State of Texas and R. E. Grantham vs. John Porter, trustee. The lower court was partly affirmed and partly reversed.

The case came up from the northern district of Texas, Abilene division. The issues began when the State of Texas filed suit in Travis County to assert its claim for gasoline taxes and to foreclose a lien against property of the White Star Refining Co., an East Texas company.

In reaching its decision the appellate court said: "The judgment refusing to vacate the adjudication is affirmed but the refusal to restore the property to the state court is reversed so far as it applies to the plant and equipment of the company. The sale of the plant and equipment pending appeal is nullified by the reversal and must be set aside. The injunction against the State of Texas and her officers, and against the judge of the state courts and its officers, is reversed and set aside. The bankruptcy case stands for further proceedings not inconsistent with this opinion.



Measures Suggested for Interstate Conference

Governor-elect E. W. Marland of Oklahoma has addressed explanatory letters on the January interstate compact conference to the governors of the 14 oil producing states, as well as copies of proposed federal and state legislation.

"When the conference reconvenes on January 3," Mr. Marland wrote, "I do not expect, and in fact I think it would be premature, to attempt to draft a specific form of compact. I do think it desirable, however, to have a full and free discussion of the possibility of co-operation between the oil producing states and federal Government as an alternative to the prediction we have heard of federal control of the production of oil, and the prediction that chaos will follow if federal control is not initiated on the termination of the petroleum code.

"If a compact is ultimately attempted, the first step will be state statutes authorizing delegates to meet and negotiate; these preliminary statutes need not bind the legislature to accept the results of the conference."

States Represented

Mr. Marland already has received assurance Governor Alf Landon of Kansas and Governor James Allred of Texas will attend. Other states to be represented are West Virginia, Pennsylvania, Illinois, Ohio, Michigan, Louisiana, New Mexico, Wyoming, California and Arkansas.

"Most of the 14 states will have their legislatures in session at that time, which will prevent many of the governors from attending," Mr. Marland said, "but virtually all have assured me they will be represented at the January conference."

He was emphatic in pointing out that the drafts already prepared are "only suggestions" and will not be presented as a "cut and dried plan."

"The proposed federal act, if enacted, would state certain objectives on which I think we are all agreed," Mr. Marland explained in his letter, "that is, the control of importations, the control of 'hot oil' (in a form modified to meet questions raised by justices of the Supreme Court on the hearing of the Amazon and Panama cases) and the setting up of a fact-finding agency which would have advisory powers.

"In addition, this draft suggests that the states be given the opportunity, if they so desire, to participate in the fact-finding agency and enter into an agreement with each other to treat that agency's recommendations as admissible evidence in proceedings of the local regulatory bodies, and, to the extent that the respective state laws may authorize, to make those recommendations effective.

"The adoption of the recommendations of the fact-finding agency would be wholly a matter of comity by each state, however.

"If we agree at the January 3 meeting on a general form of state statute authorizing negotiations (which, however, need not be exactly uniform in all the states) our legislatures may consider that bill while Congress is considering federal legislation," Mr. Marland concluded.

The proposed federal bill to be adopted by Congress follows:

"An act for the stabilization and conservation of the American petroleum supply and authorizing co-operation between the federal and state governments for such purposes.

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

Fact-Finding Agency

"Section 1. (a) Composition. The President is authorized to establish in co-operation with the oil-producing states or such of them as may desire to participate, a joint fact-finding agency, referred to herein as the 'interstate oil conference,' to consist of such federal officers or agencies as the President may designate, and one member to be appointed by the governor of each petroleum-producing state which may request to participate therein.

"(b) Findings of required production by the President. The President, with the advice of the interstate oil conference, shall from time to time make and publish a finding of the daily average quantities of petroleum required during a stated period of not to exceed six months (a) from the domestic production and (b) from importations from foreign countries, in order to reasonably supply (1) the estimated demand for consumption within the United States and (2) the estimated demand for export from the United States.

"(c) Recommendations by the conference. When the president has determined the daily average quantity of petroleum required from domestic production, the interstate conference shall within 10 days thereafter find and recommend to the government of each state participating therein what part of said quantity constitutes the demand for production thereof from that state; provided, that said finding and recommendation be made by the president if all the representatives of the participating states fail to agree therein. If any regulatory body authorized by a state to determine demand for petroleum production shall request, the conference shall supply such data as may be necessary to enable such state regulatory body to consider or concur in the recommendation of the conference.

"(d) Conservation laws. The interstate oil conference is authorized to formulate and recommend to the state governments conservation laws and regulations, uniform in principle, which will promote the maximum ultimate recovery of petroleum reserves.

"(e) Other duties. The interstate oil conference shall exercise such further and incidental duties as may be authorized by the states participating therein and approved by the president.

"(f) Procedure. Before the findings and recommendations authorized by sections 1 (b) and 1 (c) are promulgated, hearings shall be held by the interstate oil conference after reasonable published notice, in no case less than 10 days, and at any such hearings any person or governmental body interested in the subject matter of the hearing shall be entitled to be heard. In all respects not otherwise specified the interstate oil conference shall fix its own rules of procedure.

Interstate Compact

"Section 2. Any two or more petroleum-producing states are authorized, subject to the provisions of this section, to enter into an agreement in the form of a written compact or reciprocal legislation, whereby each may undertake (a) to participate in the joint fact-finding agency authorized by section 1 of this act; (b) to receive and consider the recommendations of such agency as to the demand for petroleum to be produced in the state, and, to the extent that and in such manner as its laws may authorize, to make such recommendations effective; (c) to co-operate, through said agency, in the formulation and recommendation of uniform conservation laws and regulations promoting the maximum ultimate recovery of petroleum reserves, and (b) to take such other steps as may assist in making this act effective. Provided, that no such compact shall become effective until approved by the president; that the president shall appoint a representative of the United States who shall co-operate with the states in negotiating said agreement; that any oil producing state may adhere to or withdraw from said agreement on six months' written notice to the president and the other states which are parties. Provided, further, that said agreement may be terminated at any time by act of congress, or by concurrent resolution of the two houses, or by executive order of the president.

Transportation

"Section 3. (a) It is hereby declared unlawful to transport, offer for transportation, or receive, in interstate or foreign commerce, petroleum produced or withdrawn from storage in excess of the amount permitted to be produced or withdrawn from storage by any state law, or valid regulation or order prescribed thereunder by any board, commissioner, officer or other duly authorized agency of the state, and the products of such petroleum. The president is authorized to prescribe such rules and regulations as may be required to enforce the provisions of this section.

"(b) Any violation of this section or of any rule or regulation of the president issued under the provisions of this section shall be punishable by fine of not to exceed $..... or by imprisonment not to exceed ..... months.

Importations

"Section 4. The president, through quotas if necessary, shall limit the importation of petroleum and its products (including natural asphalt), to such quantities as will prevent importation thereof from interfering with current domestic production by supplying an undue proportion of the domestic consumption and export demand therefor. The treasury department shall apply and enforce at the ports of entry the quotas and restrictions so established.

"Section 5. If any provision of this act or any clause, sentence, or part thereof be held unconstitutional or invalid for any reason or the applicability thereof to any person, circumstance, commodity or class of transactions with respect to any commodity be held invalid, the validity of the remainder of the act and of the applicability of such provisions to other persons, circumstances, commodities and classes of transactions shall not be affected thereby."

The State Act

The state statute proposed for passage by the legislatures of states affected reads as follows:

"Draft of a state statute authorizing negotiation of an interstate compact.

"An act authorizing the negotiation of an interstate compact for the conservation and stabilization of the American petroleum supply.

"Be it enacted, etc.

"Section 1. The governor of this state is authorized to appoint a representative to meet with representatives of other petroleum producing states and the United States for the purpose of drafting an agreement embodying all or any of the following objectives:

"(a) Co-operation among the oil-producing states and the United States in the creation of a joint fact-finding agency for the periodic forecasting of demand, and recommendation to the petroleum-producing states of the relative part thereof constituting the demand for petroleum from each of them.

"(b) Provision of methods for the voluntary regulation of production by each compacting state in accordance

(Continued on Page 50)

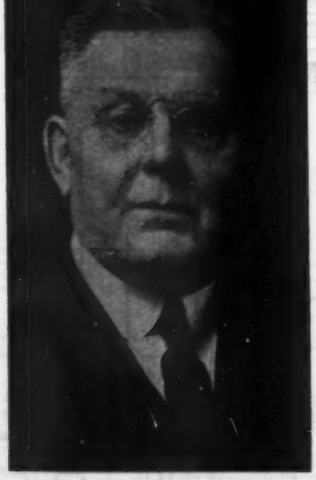
Charles E. Kern, Veteran Washington Newspaperman, Dies After Long Illness

WASHINGTON, D. C., Dec. 22.—Charles E. Kern, well known newspaper writer and attorney, died at his home here Thursday at the age of 72. Mr. Kern was formerly Washington correspondent for The Oil and Gas Journal and The Oil City Derrick, a post which he was forced to relinquish because of ill health. He had been seriously ill for several years.

Before his connection with The Oil and Gas Journal Mr. Kern was a political commentator for the Washington Post and the Washington Star. As a political writer he drew the attention of P. C. Boyle, publisher of The Oil City Derrick, for his handling of a petroleum investigation in 1900. This led to his connection with the Journal, and since that time he has covered the oil and gas industry here, particularly the governmental and political policies affecting the industry.

In his later years Mr. Kern took up the study of law and was admitted to the bar of the Supreme Court of the District of Columbia in 1918. His contacts with the various government departments opened the way for an extensive law practice before these agencies, where he handled matters pertaining to the oil and gas industry.

Mr. Kern started his newspaper activities in the early eighties as a reporter on the National Republican, but in 1887 he deserted the profession for a short while to serve as secretary of a party which went to Nicaragua to determine the feasibility of a Nicaraguan canal. Upon his return to this country he once more took up his newspaper career after a lapse of only a couple of years.



CHARLES E. KERN

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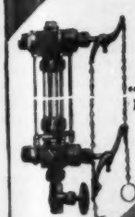
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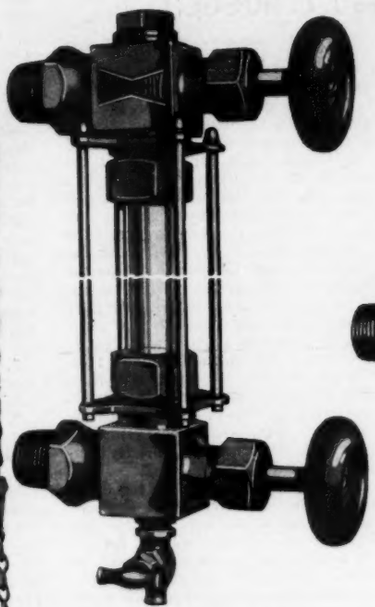
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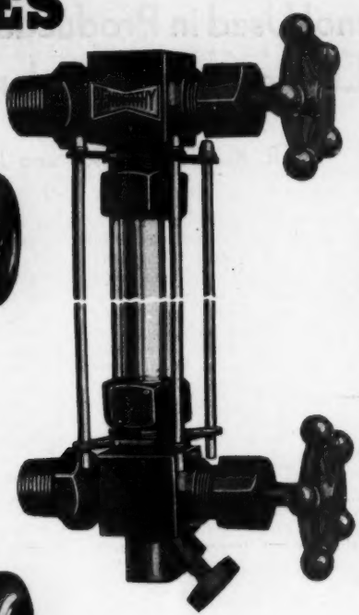
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FRANCE

Phenol Used in Production of High Grade Lubricants at Port Jerome Refinery

By R. K. STRATFORD and J. L. HUGGETT

Legislation of 1903 removing the tariff protection previously accorded the refining industry in France dealt a very serious blow to the French petroleum industry. The war years of 1914-1918 served to point out very clearly how vitally governmental legislation had jeopardized national security as regards the assurance of petroleum supplies. Furthermore new legislation was essential to permit France to benefit from her newly acquired interest in the Iraq Field.

The law of March 30, 1928, inaugurated the birth of a new petroleum industry in France designed to guarantee national security, assure an outlet for the French participation in the Iraq Field and improve national economy by the addition of an important element of industrial activity. However, this legislation resulted in a complex situation evolving from the necessity of balancing production and distribution. The solution of this problem was found in the collaboration of several distribution and production groups to form the "Standard Franco-Americaine de Raffinage."

In July, 1931, this company commenced the construction of a complete refinery at Port Jerome, situated on the Seine between the seaport of Le Havre and the river and canal port of Rouen.

Solvent Treating Plant

In keeping with the most modern development in the refining of high grade lubricating oils a solvent treating plant was constructed. The Standard Franco-Americaine de Raffinage chose phenol as the solvent best suited to its needs. This plant of 3,500 bbls. per day charging capacity is the second commercial plant for the production of lubricating oils by phenol treatment and has been in successful operation for about a year. Its predecessor is the 2,000 bbls. per day plant which has been in successful operation by the Imperial Oil Refineries, Ltd., at Sarnia for the past four years. Detailed information concerning the latter plant has been previously published in three papers.[1]

To Edeleanu[2] must go the credit of introducing the principle of solvent refining to the petroleum industry. The principle of sulphur dioxide treating and its development to commercial plant practice for improving particularly the ring number of kerosene has been known for some years.

In May, 1926, F. Schick was granted a patent[3] covering the use of phenol plus a large number of diluents for the refining of hydrocarbon oils derived from mineral and other oils. In September of the same year J. P. Fraser obtained patent rights[4] for a complete treating and recovery process, especially for the treatment of refined oil distillates, based on the use of phenol containing 5 to 15 per cent water. Beginning early in January, 1928, a very comprehensive series of experiments was undertaken covering the application of various solvents, and of phenol plus various diluents in particular, in the treatment of refined and lubricating oil distillates by R. K. Stratford and his associates, G. McIntyre, H. H. Moor and O. S. Pokorny of the Imperial Oil Refineries, Ltd. at Sarnia, Ontorio, Canada.

The economics of modern practice in the refining of lubricating oils has from necessity been directed toward the utilization of low grade crudes for the production of oils of quality commensurate with the high grade demanded by modern developments in engine design. Until comparatively recent years such a practice has been impossible because of the limited treating agents at the disposal of the refiner. About a year after the commencement of the work at Sarnia on refined oil distillates the advantages of nonaqueous phenol as applied to the treatment of lubricating oil distillates[5] were demonstrated. The introduction of phenol as a selective solvent in the refining of lubricating distillates from low grade crudes indicated the large number and types of stocks which could be profitably used to produce lubricating oils of the quality demanded in modern engines which will now be briefly outlined.

In general, an oil must have the desirable properties characteristic of Pennsylvania and coastal oils without their less desirable features. Particularly for internal combustion engine lubrication, an oil must, like a Pennsylvania oil, have a viscosity-temperature curve with a relatively flat slope, numerically best revealed by a high viscosity index.[6] Otherwise the oil will give inadequate lubrication at high temperatures and the starting torque in cold weather will be excessive. The oil must also have the low carbon forming tendency and low cold test of coastal oils. In addition to these factors, consumption, stability towards oxidation, gravity, color and flashpoint must be considered.

Intensive laboratory work in treating demonstrated that oils meeting these requirements could be economically produced from low grade stocks by phenol treating. The quality of motor oils so produced was substantiated by extensive engine tests. Special oils such as transformer and turbine oils are also produced by this treatment and, in addition to crankcase oils, have given excellent results in automotive and industrial service throughout Canada during the past four years. This success was largely responsible for the adoption of phenol by the Standard Franco-Americaine de Raffinage in the Port Jerome refinery. Before giving a detailed description of this plant a more general treatment of phenol as a selective solvent and the factors involved in operation will be outlined.

Solvent Action of Phenol

The action of phenol is purely physical. The separation of the less desirable unstable aromatic and unsaturated compounds from the naphthenic and paraffinic constituents of petroleum stocks result from the preferential solubility of phenol toward the former class of compounds. There is no accompanying loss such as is sustained in the conventional method of acid treating for example.

All lubricating oil stocks contain components, differing in nature and quantity, which detract from quality lubricating oils when processed by conventional methods. Phenol has been proven by laboratory and plant experience to be capable of efficiently accomplishing the necessary segregation in a very wide variety of stocks. Its flexibility as a treating agent has been demonstrated in the treatment of over 100 stocks in the laboratory, marked improvements having been made in the following types of oils:

1. Very low and very high viscosity index oils.
2. Narrow and wide cut oils.
3. Clean and dirty stocks.
4. Light overhead and heavy residual stocks.
5. Waxy and dewaxed oils.

Without recourse to refrigeration or solvent volumes exceeding 175 per cent the Sarnia plant currently produces from Colombia, oils ranging from transformer to airplane oils and from Mid-Continent, neutrals and bright stocks. The Port Jerome plant produces its requirements from Colombian stocks.

Operating Factors

There are three important operating factors which have a direct bearing on the yield and quality of the reffinate:

1. Treating Temperature—The treating temperature is necessarily confined within the limits of the miscibility temperature of phenol and oil on the one hand, and the solidification temperature of the mixture on the other. It is ordinarily in the range between 100° F. and 180° F., although temperatures up to about 250° F. may be used in certain cases. An increase in temperature gives a greater degree of improvement but lowers the yield of raffinate. The desired temperatures can be obtained with the expenditure of comparatively little energy. No refrigeration is required and no difficulty is encountered with waxy stocks.

2. Ratio of Phenol to Oil—An increase in the proportion of phenol to oil has an effect somewhat similar to that obtained by increasing the temperature. The optimum treating conditions so far as these two factors are concerned are largely governed by the properties of the stock to be treated and the improvement desired.

3. Method of Extraction—Extraction by phenol may be carried out by batch or countercurrent treatment. The latter method, which is used commercially, is more efficient as better quality and color improvement are attained by the circulation of a much lower volume of solvent.

Extraction Results

The general results obtained by the phenol extraction of a lubricating fraction may be summarized as follows:

1. Viscosity Index—Plant operations have shown consistent improvements of 45 to 55 points in viscosity index with Colombian stocks. Greater improvement could be obtained with a sacrifice in yield. Stocks of higher initial viscosity index have been treated to a 100+ vi-

2. Yield—This factor is, in general, a cosity index.
function of the improvement in viscosity index between charge stock and raffinate and, to a lesser extent, a function of the viscosity index of the feed stock. At Port Jerome raffinates of 75 to 85 viscosity index have been obtained from Colombian oil with yields of 55 to 65 per cent.

3. Conradson Carbon Reduction—In general, the Conradson carbon residue of a lubricating oil is reduced from 60 to 95 per cent, depending on the charge stock.

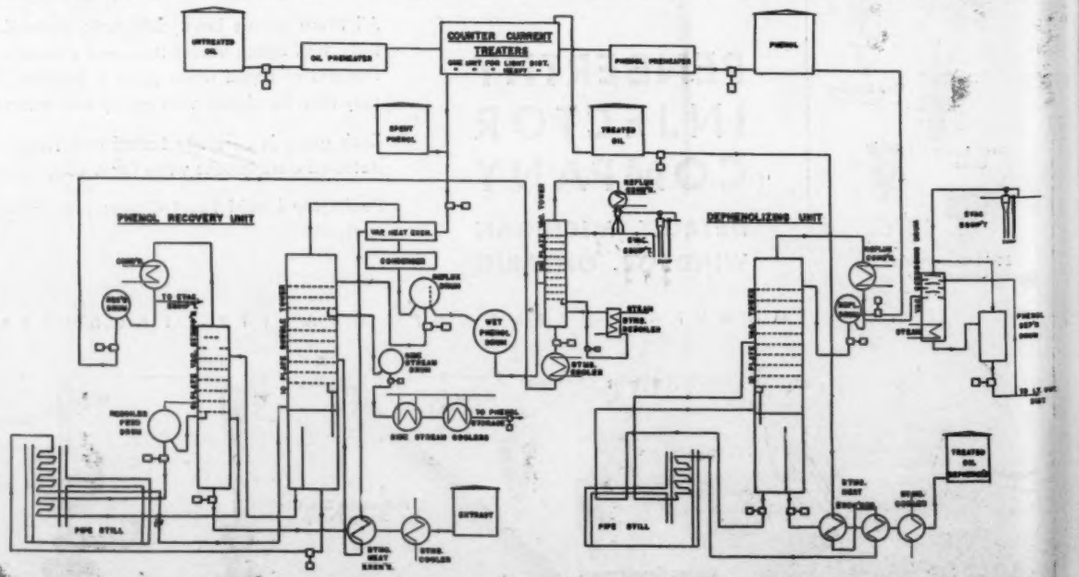
4. Flashpoint—As phenol treating does not materially modify the distilling range the flashpoints of charge stock and raffinate are practically identical. There is an exception in the case of extremely wide fractions in which instance the flashpoint increases slightly.

5. Gravity—A marked improvement in gravity accompanies phenol treatment.

6. Color—A very pronounced improvement in color results from phenol treatment of clean stocks. The improvement is less pronounced in the case of dirty stocks and varies with the quantity and nature of the coloring constituents.

7. Sligh Oxidation Number Reduction—Phenol extraction markedly improves the stability of the oil towards oxidation, as measured by the Sligh oxidation number and other methods. A heavy Colombian stock of 145 S.U. viscosity at 210° F. before treatment showed a Sligh number of 87.5 and after phenol extraction of 0.8.

8. Sulphur Reduction—The sulphur



Flow chart of the phenol treating plant at the Port Jerome refinery of Standard Franco-Americaine de Raffinage

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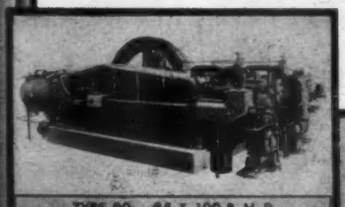
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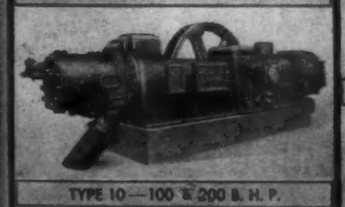
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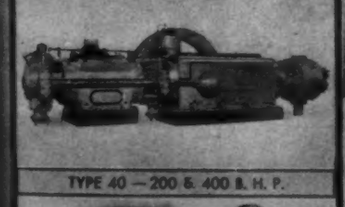
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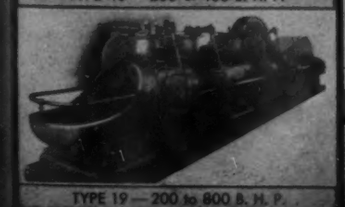
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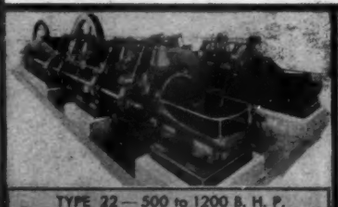
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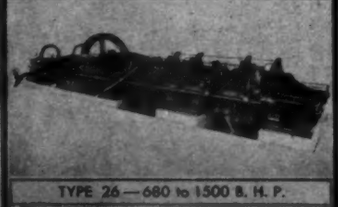
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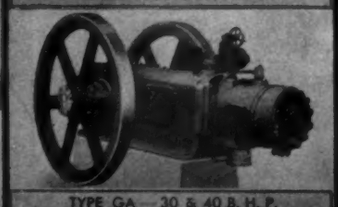
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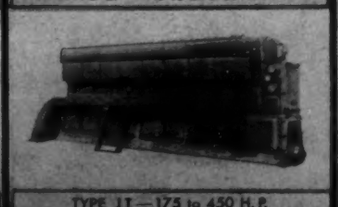
TYPE BN—25 to150 H. P.

TYPE EP—75 to 275 B. H. P.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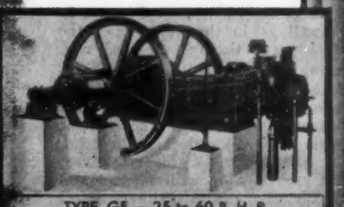
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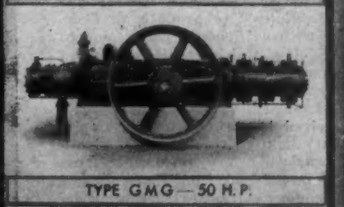
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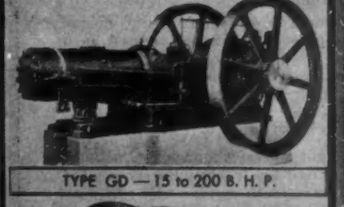
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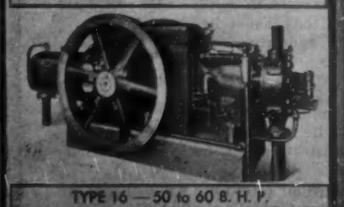
TYPE 16—50 to 60 B. H. P.

content of Colombian stocks is currently reduced from 60 to 80 per cent, depending on the treating conditions employed.

9. Steam Emulsification Number—Low steam emulsification numbers are obtained, particularly in the case of the heavy lubricating oil grades

General Results

Stocks Treated at the Port Jerome Refinery—Up to the present time only Colombian lubricating distillates have been used at Port Jerome for the manufacture of lubricating oils. One or two lubricating oil cuts are taken from the vacuum side of the crude flash coil. These stocks are given a phenol treat and the raffinate is then rerun in a vacuum still where the desired lubricating oil fractions are obtained. There are several grades of lubricating oils produced by phenol treatment. They are as follows:

1. A wide lubricating oil cut from Colombian crude is lightly treated with phenol, the raffinate amounting to about 80 per cent on charge, with a V.I. averaging 50-60. Such a treatment does not remove all the organic acids from the distillate. The oil is given a lye treatment and charged to the rerun flash coil where the required lubricating oils are cut overhead.

2. A lubricating oil distillate with a V.I. of 75-85 is produced by treating a wide lubricating oil cut with phenol. The yield of raffinate obtained averages about 60 per cent. As this treatment is sufficient to remove all the organic acids from the oil it is not given a lye wash but is simply charged to the rerun flash coil where the desired lubricating oils are cut overhead from the vacuum bubble tower.

3. Another line of lubricating oils has been produced from Colombian distillate with a V.I. around 90-95. It requires severe treatment with phenol to produce such a stock from Colombian distillate and the yield amounts to only 35 per cent. Such a treatment can only be economically successful if the extract is rephenol treated for the production of low grade motor oils. The possibility of doing this is being studied at Port Jerome. In this, as well as in the other case, the raffinate is rerun through the flash coil.

Finishing Raffinate—With the exception of the cylinder stock all the lubricating oils which are being phenol treated are rerun and the overhead fractions cut directly to lubricating storage. In other words no subsequent treatment is given. This is a great saving both in acid and clay. In the case of the cylinder stock the operation of the rerun battery has not been stabilized to produce an overhead cut with sufficiently good color to eliminate clay finishing. Recent word from France indicates, however, that this has lately been done so that in the production of lubricating oils the only treatment received is phenol with the exception that lightly treated stocks are caustic washed before rerunning. This procedure is different from that followed by any company solvent extracting at the present time.

Extract—The extract from the phenol treating process in France is used as a cracking stock or for mixing with asphalt whereby the emulsifying property of the latter is improved.

Description of Plant

The plant operates in such a manner that the distillate is continuously treated and separated into extract and raffinate portions, the phenol being continuously reclaimed and reused. The plant consists essentially of three parts; a pair of countercurrent treaters (one for light lubricating distillate and one for heavy), a dephenolizing unit, and a phenol recovery unit. Figure 1 is a schematic diagram illustrating the complete treating process.

Preheated oil (100-150° F.) and phenol pass countercurrently through the treating plant consisting of seven mixers, seven settling drums, and the necessary pumps, liquid level controllers, etc. The transfer of the two phases from stage to stage is entirely automatic, the levels in the different compartments being controlled by floats which alter the degree of opening of valves in the discharge lines of the centrifugal transfer pumps. The level of the oil-phenol interface in the various settlers is adjusted by means of a weir valve in each settler. Treated oil is drawn from the top of the seventh settling drum and pumped to the tank from which the dephenolizing unit is charged. Spent phenol is drawn from the bottom of the first settling drum and discharged through a cooler into a settling tank which is maintained at a temperature of 105° F. The oil which separates from the cooled spent phenol in this tank is recycled to the countercurrent treater. The cooled spent phenol is discharged to a tank before being pumped to the phenol recovery unit. The treater described above is for contracting heavy lubricating oils and is similar to the one employed for light oils except that in the latter case the spent phenol is not cooled to reclaim cycle oil.

The treated oil containing 8 to 15 per cent phenol is pumped to a vacuum pipe still, the charge being first preheated in a bottoms heat exchanger. From the coil the charge enters above the fifth plate of a 10-plate vacuum tower. The phenol coming overhead is condensed and flows into a reflux drum, the remainder being discharged to pure phenol storage. The vapors going to the evacuating equipment are scrubbed in a small drum with a light untreated distillate, the bottoms of the scrubber being reboiled with closed steam. The oil which accumulates on the bottom plate of the tower is discharged through a reboiler coil and is returned to a point near the bottom of the tower. The bottoms then flow through the heat exchanger, a cooler and then to dephenolized treated oil storage.

The spent phenol containing 25 to 30 per cent oil is preheated in a vapor heat exchanger and bottoms heat exchanger and then enters a 10-plate atmospheric tower at the third plate from the bottom Pure phenol is taken as a side stream from the third plate from the top and after being cooled it is discharged to phenol storage. The overhead from this tower is chiefly phenolic water. The portion of this overhead not used as reflux flows to a small recovery plant where the water is removed from the phenol in a 10-plate vacuum tower, the bottoms being reboiled with closed steam. When free of water the bottoms are pumped to spent phenol storage, the overhead flowing to the sewer. The bottoms from the phenol recovery atmospheric tower are reboiled and returned to the tower before flowing to a six-plate vacuum stripper. The portion of the condensed overhead from this stripper not used as reflux is recycled with the incoming spent phenol charged to the unit. The bottoms are cooled and delivered to extract storage. The vapors exhausted by the evacuating equipment are scrubbed with those coming off the dephenolizing tower as previously described.

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Initial crude distillation unit at the Port Jerome, France, refinery of Standard Franco-Americaine de Raffinage

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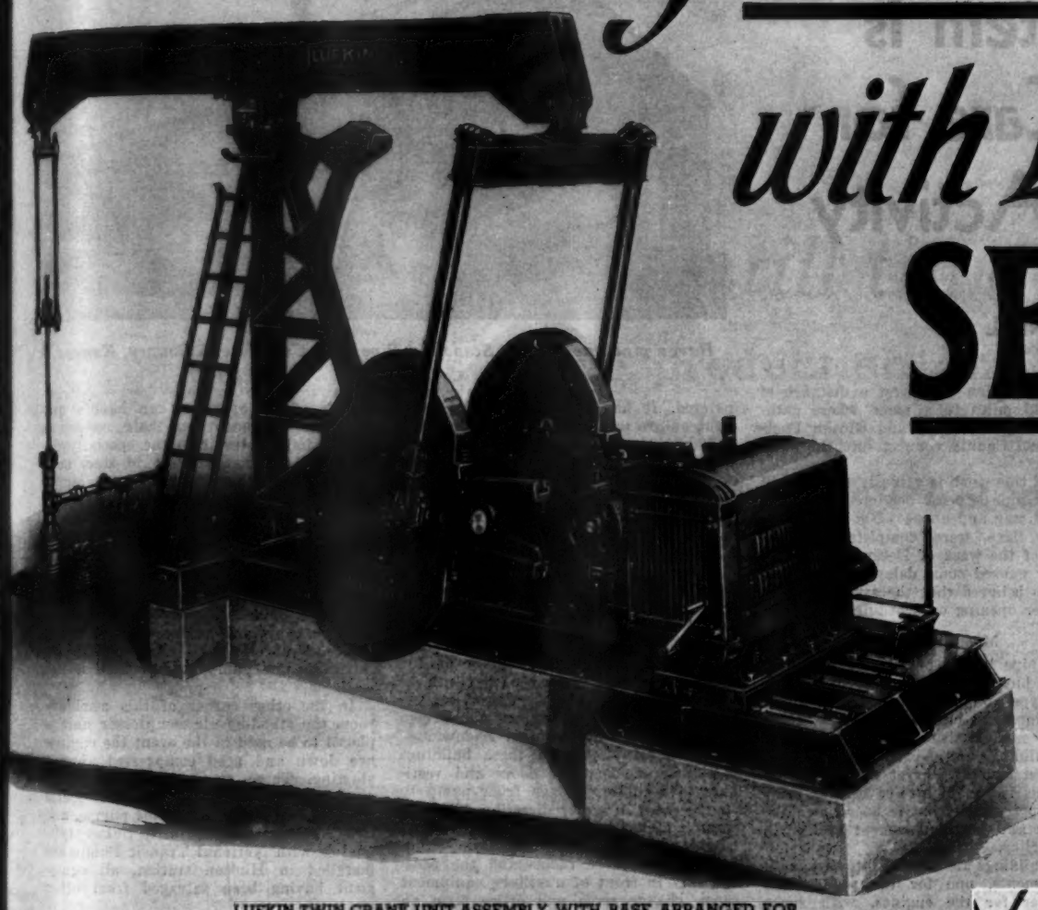

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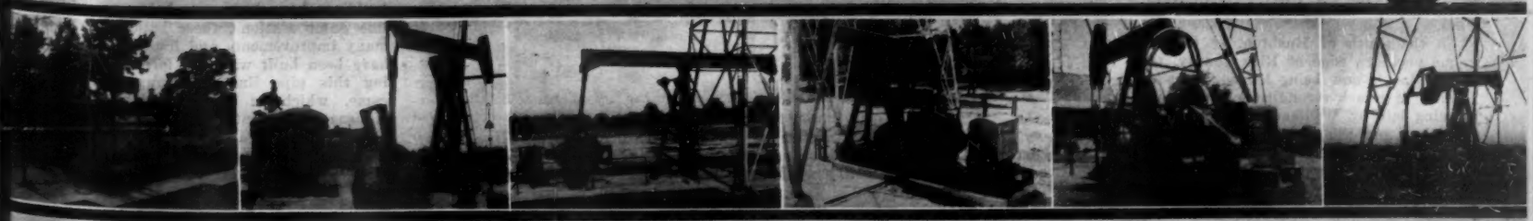

TYPICAL LUFKIN INSTALLATIONS OF VARIOUS TYPES OF UNITS.

Pipe Line System Is Increased to Care for West Kansas Activity

By L. G. E. BIGNELL
Petroleum Engineering Editor

Haven pipe line station, Stanolind Pipe Line Co. in Reno County, Kansas

In keeping with a policy inaugurated last spring to be in position to serve the oil producers of western Kansas in an adequate manner, the new pipe line system of the Stanolind Pipe Line Co., Tulsa, from Eldorado, Kans., station westward to Reno County and then north through Stafford, Rice, Ellsworth and Barton Counties, and terminating in Russell and Ellis Counties, is now being looped in several places and additional gathering lines are being laid in Stafford County to serve the Gates Pool.

The line to the east of Eldorado, Kans., station is being looped with a new 10-inch welded line 20 miles long extending to Sallyards junction, near the west boundary of Greenwood County. Two other 10-inch loops of the same character are being laid to the west of Eldorado, one 19.9 miles long extending across most of Sedgwick County, and the second loop about 25.3 miles southeast of Stafford in Stafford County. These loops are 10-inch new pipe welded lines along side of the original 8-inch line.

Capacity Increase

These extensive additions to the system of the Stanolind Pipe Line Co. in Kansas, which will increase the capacity of this system from about 20,000 to 27,000 bbls. per day, are being made anticipating increased production of oil in the western Kansas area where there is a great deal of new development work now being carried on. Acid treatment of wells in the many fields producing from limestone is also increasing the potential of the area and it is believed that by next spring the new system will be handling oil to its full capacity practically all of the time.

With the 10-inch loops in operation the station equipment, consisting of horizontal duplex pumps and Diesel type engines, will have ample capacity to handle the full load. The two loops to the west of Eldorado are being laid by Smith Brothers Construction Corp. of Kansas City, Mo., while the 20-mile 10-inch section to the east of Eldorado is being laid by Sheehan Pipe Line Construction Co., Tulsa.

While the large diameter loops will increase the systems carrying capacity into and out of Eldorado station, it has also been found necessary to lay a 4 and 8-inch reconditioned pipe gathering line from the Hudson station up to Gates Field that is in the northern portion of Stafford County. The oil from this pool is now being delivered to a loading rack at Seward and hauled away in tank cars. This new line will consist of about 8 miles of 8-inch pipe that extends directly west from Hudson station and then 7 miles of 4-inch diameter line directly north from that point to the Gates Pool.

To the south of Bushton, at the extreme northern edge of Rice County, the 6-inch line is now being looped by about 7 miles of 8-inch reconditioned pipe that is being laid by Williams Brothers, Inc., of Tulsa, and this same concern is also laying a 6-inch reconditioned pipe loop alongside of the original 6-inch line from Bushton station northwest a distance of about 30 miles to a place where gathering lines from Ochs and Gideon Pools in Russell County connect into the main line.

All of this work is actually started and the new pipe is being delivered along the right of way and about 4,000 feet of the smaller lines were completed by the middle of the week of December 17. Bad weather caused some delay in the work, but it is believed that the system will be ready for opening on schedule.

Modern Stations

This pipe line is of interest for many reasons, but one of the most outstanding is the type of buildings erected to house the engines and pumps. At Haven, Reno County, and Hudson, Stafford County, these buildings are of brick, approximately 98 feet long by 46 feet wide, with the side walls 18 feet high to eaves. The roofs are of corrugated transite board made of asbestos and portland cement laid upon steel purlins.

The buildings are divided into two main compartments, one for the pumps and the other for the engines, with space walled off at one end for auxiliary equipment and for office and change room. The ceiling of the pump room is made of pressed steel interlocking panels while the balance of the building is covered by the pitch roof only.

The exterior of the building is made of face brick and the inside finish is of salt-glazed tile, with the frame of the building made of structural steel bolted together. The fire wall is made of 8-inch tiles. The floor is of concrete and was not laid until all pipe and conduits were in place and checked and the ground settled.

This type of building construction has been estimated to cost only about 10 per cent more than the same size building with face brick exterior and common brick interior, finished with plaster and painted. It has the properties of being tight and so built as to exclude fine sand and dust that is frequently blown about in this region, and in buildings not dust proof machinery is damaged in a short time.

The windows and doors are set in steel sashes and frames that are tight in the building walls. There are two horizontal duplex double acting pumps in the pump room with an auxiliary suction pump at one end of the room at each station. The Diesel engines for the pipe line pumps are in large engine rooms and in these rooms there is also an auxiliary marine type engine and generator that can be used when the regular generator, set between the two main engines and driven from either one or the other is down.

One novel feature of these buildings is the arrangement of doors and vestibule to regulate passage from pump to engine room in either direction. The fire walls and partitions between pump and engine room and at the end of the building between those rooms and the passage way in front of auxiliary equipment room, change room and office form an angle across which the vestibule is built. It is a square in shape with one corner of the square cut across by one wall of the vestibule and in that wall the door from the engine room is placed. Doors to pump room and passage way are placed in the fire wall and partition so that anyone passing from one portion of the building to another cannot create a direct passage for movement of air from one side of the building to another. This is a precaution against fumes or fire passing from pump to engine room.

Auxiliary Equipment

Over the pump room there is a traveling crane with a 17-foot span and about 6 ton capacity, and another crane of the same type but 10-ton capacity with a 24-foot span serves the engine room. Either of these cranes can handle any piece of equipment in their respective rooms and deliver it to the specially designed doors that are set in steel sash and frame so that the entire opening in the brick work can be made available by removing the sash and frames. Through this opening the machinery can be rolled after being delivered to the door opening by the crane.

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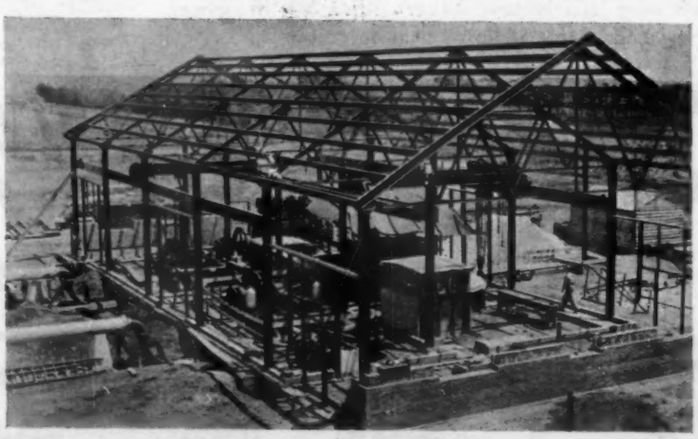
The grounds around these station buildings will be landscaped and as large a grass plot as possible maintained around the building to reduce dust and sand movements to a minimum. While brick buildings have been used before for pipe line pump stations, these buildings have many improvements and innovations and have been built with the idea of operating this pipe line for many years to come, which in turn anticipates that Kansas will maintain its position as an oil producing state. As the producing fields move westward it is logical to believe that this system will be extended.



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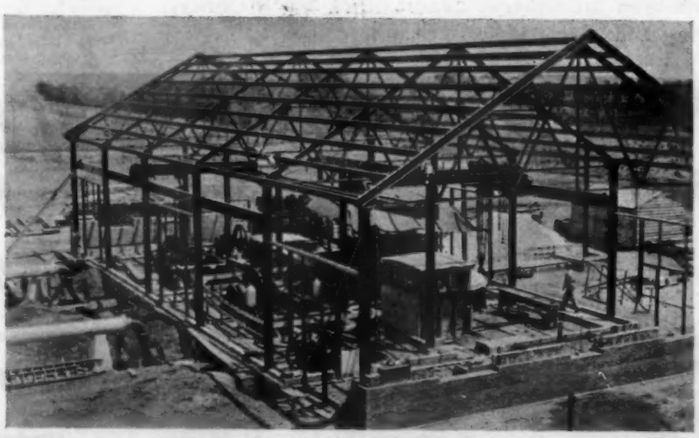

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Six Steps in Calculating National Crude Allowable

(Continued from Page 38)

probable total domestic and export demand for gasoline by all agencies in the United States during the period in question. The national domestic demand for gasoline can be forecast with a comparatively high degree of accuracy for short periods of time because of the stability, or absence of marked fluctuations, in the number of motor vehicles in use and the reliability of the trend of gasoline consumption per motor vehicle.

The number of automobiles in use in the near future can be forecast with an error of only one-fourth of 1 per cent, and the trend of gasoline consumption per motor vehicle, when adjusted for business conditions, has proven itself to be very close to actual conditions. The nonautomotive uses of gasoline comprise such a small and unvaried proportion of the total demand that they are included in the calculation of the gasoline demand per motor vehicle.

The estimated average gasoline consumption per motor vehicle multiplied by the total motor vehicles in use gives an estimate as to the total domestic demand for gasoline in the United States. This total is then broken down by refinery districts on the basis of the state gasoline tax figures. The summation of these domestic demand data by districts and estimates of probable gasoline exports by districts completes the first step and gives figures of total gasoline demand in each of the refining districts.

The gasoline supply for each district is obtained from five sources: Namely, from stocks, from sales of benzol and natural gasoline direct from producers to consumers, from natural gasoline blended at refineries, from receipts from other districts, and from crude oil refined within the district. Stock changes are based on the normal relationship in each district between inventories and shipments. In as much as the fifth source, crude runs to stills, comprises the major portions of the allocations, the general procedure involves the estimation of data for the other four sources and their deduction from the required supply. These operations complete step number two and give estimates as to the gasoline production required from crude refined in each district.

Step number three, or the determination of the crude required by refineries in each district, involves simply the review of the district's record of operations to determine the estimated gasoline yield from crude oil and its application to the figures of gasoline production obtained in step number two. The next step covers the allowance for crude imports and involves the setting up of estimates for probable receipts of foreign crude for domestic consumption in those districts where foreign crude enters and the subtraction of these data from total crude oil requirements at refineries. This operation gives data for the required consumption of domestic crude by districts.

The domestic crude requirement for refineries in each district is then broken down proportionately among the producing states which have supplied the refinery needs of that particular district in the past on the basis of established channels of movement between districts. The summation of these data give a break-down of total refinery demand for domestic crude by states of origin, the fifth step.

The sixth and last step involves the estimation of probable exports, direct uses as fuel, and losses by states, and the addition of these estimates to the data of refinery shipments to give data corresponding to the total reasonable demand for crude from each state, in other words, allocations by states.

In general, all of the estimates outlined above are based on the trends in past experience as portrayed by the most recent official statistics available. Data on imports and exports are obtained from the Bureau of Foreign and Domestic Commerce, the Division of Investigations of the Department of the Interior compiles the information as to interstate movements of gasoline, and practically all of the other basic data are secured from reports of the Bureau of Mines.

At times, special analyses are made to determine the demand for crude oil from producing areas which serve districts in which the demand for petroleum products exceeds the local crude oil supply. In such investigations the refiners using crude oil from the producing area submit information relative to their needs for this particular crude oil.

ITALY

Expansion of Refining Facilities Awaits Consideration by the Government

Plans to enlarge refining facilities in Italy which were to be announced the latter part of December are being held up pending additional negotiations between representatives of the government and the companies which expected to build new refineries or enlarge their present plants. As explained in detail in an article appearing in the November 29, 1934, issue of The Oil and Gas Journal (page 16) the Italian government starting several months ago has been gradually perfecting plans which in effect will encourage the construction of refineries in Italy to cover a large part of the domestic requirements for refinery products.

Under the new law which became effective the early part of this year companies desiring to operate refineries or import products were required to secure licenses from the government. A large number of applications have been made. In the case of refineries it is understood that none of the applications has been finally approved. It is known that those seeking licenses are endeavoring to secure modifications of certain rulings in connection with the refinery construction which are a part of the government program. The refinery regulations as originally announced called for a plant capacity 30 per cent in excess of current requirements with a large storage program. It is pointed out that this program will add substantially to the cost of refinery construction which in turn will mean relatively high operating costs and higher prices for consumers in Italy. It is feared that these higher costs will tend to offset to a large extent any advantage which domestic refiners will have over importers. The government seeks to encourage domestic refining by removing the import duties on crude oil. However, the sales and other special taxes on the finished products of refineries are as high as in the case of imported products so that if the refinery investment and operating costs are high there will be little if any advantage to the operators of refineries in Italy.

The subsidiaries of the Standard Oil Co. (New Jersey), Royal Dutch-Shell, Socony-Vacuum Oil Co., Inc., and the Azienda General Italiana Petroli (A.G.I.P.), the latter government controlled, are the principal companies which have plans to build new plants or improve and enlarge their present facilities. All of these companies at present have one or more plants of small capacity and they are also important distributors in Italy. A recent check of the plants in Italy showed that they have had a total crude oil capacity of 10,000 bbls. daily and they were running to stills less than 4,000 bbls. daily.

It is estimated that if the government program is carried out as planned, refinery construction over the next year will increase the capacity of refineries to at least 25,000 or 30,000 bbls. and that quantity of crude oil will actually be run to stills. At present, the domestic gasoline consumption in Italy is approximately 10,000 bbls. daily with a demand for other products which will increase this total to more than 30,000 bbls. daily. The fuel oil demand is in excess of the gasoline demand. This fuel oil is required by the Italian navy and steamship lines flying the Italian flag.

In the case of the four companies mentioned, tentative plans call for the construction of refineries which will have facilities to refine lubricating oils as well as the light end products. In two cases at least the companies plan to build new plants and will later junk their present equipment.

BAHREIN ISLAND

In the island of Bahrein oil field in the Persian Gulf, being developed under concession granted to the Bahrein Petroleum Co., Ltd., wholly owned subsidiary of the Standard Oil Co. of California, work has been carried on steadily during the year. The wells drilled have been put down primarily to develop the field and only about 200,000 bbls. of oil have been produced up to the first of November.

As of November 7 it is reported 12 wells had been completed, one was being deepened and two new wells were being drilled, with one derrick being erected and cellars being dug on two other locations.

Another important bit of work accomplished during the year was the completion of a marine loading terminal which includes the laying of over 3 miles of 12-inch submarine pipe line from the small island of Sitrah into the harbor where the pipe line terminates in 50 feet of water.

On shore the company has had three steel work tanks equipped with floating roofs erected on Sitrah island, total capacity 250,000 bbls., and in addition there is one 7,500-bbl. tank for ship's ballast water.

In the oil fields more than 10 miles of gathering lines have been laid to the terminal pumping plant with a capacity of 5,700 bbls. of oil per hour has been erected in a dust-proof building to protect the machinery against fine sand blown about during the "shamals" or local dust storms.

Material for this construction work was shipped from San Francisco, San Pedro and Bombay, with the construction crew of about 45 men accompanying the material from California. It took about nine months to complete this work which was started early in 1934.

Interstate Conference Measures Suggested

(Continued from Page 42)

with recommendations of the joint agency, to the extent that and in the manner that the laws of the state may permit and authorize.

"(c) The exercise by the interstate fact-finding agency of such incidental powers as may be agreed upon, including the formulation and recommendation of conservation measures.

"(d) Provision for adequate control by the United States of importations.

"(e) Provision for the adequate control by the United States of interstate movement of petroleum produced or withdrawn from storage in violation of the laws and valid regulations of the states and products of such petroleum.

"Section 2. Such agreement or compact, if one is drafted, may be in the form of reciprocal legislation which the representative of this state shall recommend to the consideration of the legislature and the governor, or in the form of an instrument to be thereupon signed by the representatives of the compacting states, subject, however, to the provisions of the following section.

"Section 3. No agreement or compact drafted hereunder shall bind this state unless and until it shall be ratified by the legislature, and the consent of the congress of the United States thereto is given."

Zephyr Halves Operating Costs in One-Month Run

A new and unusual schedule in railroad operating costs was revealed recently by the Chicago, Burlington & Quincy Railroad in data on its new streamlined Zephyr. The Diesel-electric train has operated between Lincoln, Neb., and Kansas City, Mo., at an overall cost for wages, fuel, maintenance and depreciation equivalent to less than 25 per cent of the total revenues derived from the service.

Incomes from an average of 49 passengers per train mile at 1.9 cents per mile netted $467 daily for the first complete month. Mail and express brought the total daily income of $617. The motor train operates at a cost of 35 cents a mile including the wages, maintenance, depreciation and fuel. A steam train making the same run during October cost 70 cents a mile, just twice the running cost of the Zephyr.

It was stated that the train would be written off in about two years even at a slightly decreased rate of business. At present the popularity of the service has made necessary the addition of a fourth car which will be built and installed soon. This car will increase the seating capacity from 72 to 112 passengers. The car will be inserted between the present second and third cars and will not distort the contours of the train, according to the designer.

The Chicago, Burlington & Quincy company has ordered two trains of the same type to be built at the cost of $250,000 each. Other roads are following this move by planning and building various types of Diesel powered trains, and indications are that a marked swing to this type of transportation will be made in 1935.

A comparison between the steam and Diesel trains proves that the great cost reduction must be attributed principally to the cheaper fuel. This assures a steadily increasing consumption for this oil in the coming year. Further, a trend is noted toward a lighter gravity fuel for these Diesel power units. The increase in demand for this light fuel oil or gas will lend stability to the entire refined oil price structure, by providing an outlet for the middle range of products which as yet have had no established market. Diesel oil sales for this type of consumption may be expected to at least treble in 1935.

E. P. Angus, Vice President of Magnolia, to Retire

E. P. Angus, pioneer oil man and one of the most widely known marketing executives in the Southwest, will retire as vice president and manager of sales of the Magnolia Petroleum Co. on December 31, D. A. Little, president, has announced.

Son of Capt. A. Angus, pioneer Texas railroad and oil man, E. P. Angus began his career in the oil business at Corsicana, birthplace of Texas petroleum. He

E. P. ANGUS

was living in Corsicana when the first commercial oil well in the Southwest was brought in there in 1895 and was with his father when Captain Angus participated in the shipment of Texas' first tank of petroleum to market in 1896. In 1897, just one year before Magnolia completed the first oil refinery in the Southwest at Corsicana, Mr. Angus entered the business as an employe of the Waters-Pierce Oil Co.

Mr. Angus was transferred to the Dallas office in 1902 and by 1910 had risen to the position of assistant in the railway and lubricating department of the Pierce Oil Corp.'s home office in Dallas. He entered the employ of the Magnolia Petroleum Co. in the latter part of 1911 as assistant to the general sales manager and occupied that position until January, 1928, when he was named acting general sales manager. In 1929 Mr. Angus was elected vice president and manager of sales and continues in that position until his retirement.

His entire experience has been in the marketing divisions of the two oil companies which he served. He is a Mason, a member of the Shrine, and is interested in the civic affairs of Dallas. He is married and has two daughters. He is a golfer and a hunting and fishing enthusiast.

DEATH OF JUDGE BOUTON

Former Judge Joseph W. Bouton, a successful oil producer in the Bradford Field, died in Smethport, Pa., on Friday, December 22. He served 31 years as presiding judge of McKean County. In the past 20 years he had been interested with associates in the development of the oil resources of his home county.

NEW REFINERY PLANNED

REGINA, Saskatchewan, Dec. 22.—The Consumers Refineries Co-operative Association has announced plans for a new oil refinery to be built in the outskirts of Regina and to be in operation by next spring. The plant will have a capacity of 350 bbls. a day and the gasoline output will be distributed chiefly to co-operative organizations at points near Regina. The association will sell its heavy oil output to the city of Regina for use in the municipal power plant.

Simple Curve Expresses the Relationship Between Volatility and Lead Needs

By W. T. ZIEGENHAIN

The relative cost advantage when choosing between the use of increased quantities of natural gasoline and the use of more ethyl fluid to blend with refinery gasoline production to arrive at a fixed octane number for the finished fuel, may be estimated by constructing a rather simple curve. The principle of the curve is based upon the relationship that exists between volatility and anti-knock value when applied to any series of gasolines made from the same crude and under similar operating conditions. More specifically, the 10 per cent distillation point is taken here as a measure of volatility and a series of such points is plotted against the corresponding ethyl fluid required to bring the finished motor fuel blend up to 70 octane value. The average refiner may determine the relationship that exists in his own plant and use the curve for guidance in routine operation.

Almost without exception the refiner processes a rather constant quality and quantity of crude oil from day to day and his operating conditions remain rather constant. The quantity and quality of the straightrun gasoline and the cracked gasoline remain about the same so all that remains for decision is whether to buy relatively little natural gasoline and blend to the desired octane rating by using ethyl fluid alone or take advantage of using more natural to both increase volatility and decrease the amount of lead required.

A typical curve, serving the purpose, and one which is in actual use appears below.

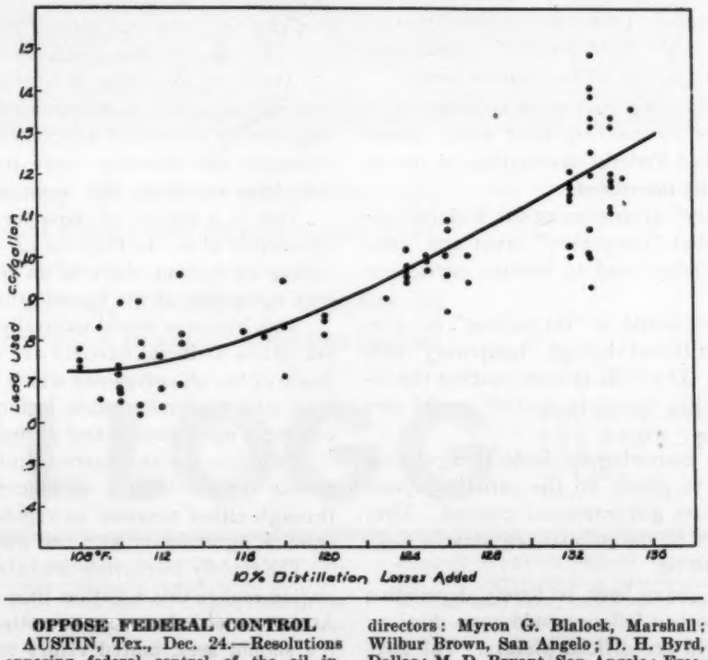
In this case the refiner is running a mixture of Seminole, Kansas and Oklahoma City crudes. In drawing the curve a mean average was struck for the series of dots which were plotted. These dots represent samples of gasoline taken from individual tanks, the gasolines showing an anti-knock value of exactly 70 octane in all instances. In each case the 10 per cent distillation point was determined and against this was plotted the ethyl fluid needed to blend this particular tank up to 70 octane. Those refiners who are equipped with ethyl blending plants have this data already available and additional tests are not needed so the construction of such a curve would be possible with comparatively little effort.

Another method for arriving at the same end, would be to choose a representative sample of a blend of straightrun and cracked gasolines and divide it into 10 or 15 parts of sufficient quantity to permit running several distillation tests and several octane number tests on each sample.

With these 10 or 15 samples as the basis, an increasing quantity of natural gasoline could be blended and the amount of leaded needed to be blended with each sample to make a finished 70 octane fuel could be determined. It is very likely that the shape of the curve would approximate that shown here. For confirmation of the laboratory findings the refiner could check the actual findings from day to day as tanks of his production are tested.

In using the curve, recognition must be given the fact that natural gasolines will vary in regard to lead responsiveness and in their constituents. Also there are several popular grades of gasoline, each with a varying butane and propane content, which in turn influence the 10 per cent distillation point on the finished motor fuel blend.

With these factors present, the lack of uniformity among the points plotted in the accompanying curve may be explained but despite these factors, it becomes quite evident that the 10 per cent distillation point does bear some relation to the amount of lead required and that the relationship can be expressed as a smooth curve.



OPPOSE FEDERAL CONTROL

AUSTIN, Tex., Dec. 24.—Resolutions opposing federal control of the oil industry were reaffirmed by the Independent Petroleum Association of Texas in its annual meeting at Austin.

E. B. Germany, Dallas independent operator, was elected president. Bailey W. Hardy of Austin was re-elected executive vice president, and J. R. Parten of Houston, retiring president, was named first vice president.

The association elected the following directors: Myron G. Blalock, Marshall; Wilbur Brown, San Angelo; D. H. Byrd, Dallas; M. D. Bryant, San Angelo; Freeman Burford, Dallas; Marion S. Church, Dallas; C. R. Cole, Laredo; R. L. Cannon, San Angelo; M. B. Davis, Pampa; Charles Doren, Houston; J. O. Fox, Dallas; Jack Frost, Dallas; E. B. Germany, Dallas; Bailey W. Hardy, Austin; C. L. Morgan, Fort Worth; J. R. Parten, Houston; J. H. Reynolds, Cisco; John A. Thompson, Fort Worth; B. F. Weekly, Fort Worth, and J. M. West, Jr., Houston.

Pipe Line Construction

NEW LINE TO DALLAS?

DALLAS, Tex., Dec. 24.—Construction of a gas line from Dallas to the Long Lake gas field discovered by the Texas Seaboard and Tide Water Oil companies in western Anderson County is being considered by the Lone Star Gas Co., it was learned from Frank L. Chase, vice president and manager of operations. More than 100 miles long, the proposed line is estimated to cost more than $2,000,000.

The company is looking into the advisability of such a line, but has made no decision about laying it. The line probably would be 20-inch. Dallas now gets its gas supply from a number of fields, including the Panhandle and Oklahoma. Whether sufficient supply could be obtained from the Long Lake area has not been determined.

Lone Star recently closed a contract with Texas Seaboard and Tide Water for gas production of the area, which failed to materialize as a commercial oil pool. The companies also have a group of shut-in gassers in their Cayuga pool in northwestern Anderson, these not being included in the contract.

Natural gas from the Long Lake Field has been turned into the Lone Star Gas Co.'s 12-inch line laid to serve more than a dozen towns and cities in Central Texas. The main carrier line, extending 75 miles to the company's gathering plant near Waco, will increase Lone Star's capacity in central Texas by about 35,000,000 feet daily.

Gas piped through the new line is available at the following towns and cities: Waco, Taylor, Hewett, Lorena, Eddy, Moody, McGregor, Oglesby, Gatesville, Chilton, Lott, Rosebud, Troy, Temple, Belton, Little River, Rogers, Buckholts, Cameron, Rockdale, Holland, Bartlett, Granger, Hutto, Georgetown and Round Rock.

The Waco-Bryan line of the Gold Star, which will also be fed from the Long Lake field, will serve Mart, Marlin, Bremond, Calvert, Hearne and College Station.

TEXAS-DETROIT LINE TALKED

MUSKEGON, Mich., Dec. 24.—Michigan Public Utilities Commission will conduct a hearing December 26 in Lansing on an application of the Industrial Natural Gas Pipe Line Co. to pipe natural gas from Michigan fields to Detroit for industrial purposes.

A. T. Sarkisson, head of the Detroit company, announced approval of the permit would mean the immediate launching of an extensive drilling campaign embracing the entire State. Mr. Sarkisson also announced the company is prepared to extend pipe line facilities from Texas fields to Detroit for the same purpose.

Petitions supporting the company's application for a permit to lay the proposed new Michigan line have been circulated and will be filed with the state commission, it also was announced.

EXTEND SINCLAIR PRAIRIE LINE

To handle the increased production available from the Hollow and Haury Pools in Kansas, the Sinclair Prairie Pipe Line Co. has looped its 4-inch line from Haury Field to its Wash station in Harvey County, Kansas. This is a 7-mile line laid with 6-inch reconditioned pipe and welded. It parallels the 4-inch line that has been serving the Hollow Pool and while the terminal for the new loop will be in Haury Pool it will permit additional oil from being moved from the Hollow Field also.

PECOS VALLEY EXTENSION

FORT WORTH, Tex., Dec. 24.—The Pecos Valley Gas Co. is laying a 26-mile extension of 6-inch pipe from the Carlsbad main line to a connection with the Jal-El Paso line 26 miles to the southeast. It will make available an emergency supply of 6,000,000 feet a day from the Jal Field.

THE OIL AND GAS JOURNAL

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Reason for Alarm

The oil industry, having had one "shot in the arm," is alarmed lest it becomes an addict to Federal "dope". After experiencing all the illusions and delusions it has had a cruel awakening and fears for its future.

It has been made very clear during the past week by the reiterated threat to have the industry made a public utility that the only end to the road of Federal control is the padded cell of complete political regimentation "from the well to the filling station pump."

The adjourned conference of oil state governors considering an interstate compact, which resumes its meeting next week, should ponder the possibilities of unchecked Federal domination of the industry in which they are all so vitally interested.

Talk of some form of "temporary" arrangement for Federal control overlooks the historical fact that "temporary" taxes and "temporary" political jobs almost invariably tend to become permanent and to increase.

Control of a vast industry like oil would be "fat picking" for politics. Once the possibilities had been tested through "temporary" control there would be no letting go. The code is now costing the industry a million dollars a year; what complete control would cost staggers the imagination.

Not one of those who have been clamoring for Federal regulation, except possibly those who aspire to places on the official payroll, would gain a single advantage from governmental control. They would have no choice but to submit to the official regulations however harsh, however silly, they might be.

The jobbers and marketers who have been so loudly demanding that the government regulate the other fellow would soon discover that they themselves had no place in the official picture. The irreconcilable producer or refiner who has been stoutly insisting on his "right to do what he pleases with his own" would find himself on the outside looking in.

What would happen to the motoring public can easily be guessed. No one can imagine the government furnishing free air, water or any of the extras that the oil industry supplies at the filling station. Can any one fancy a government employe wiping your windshield? Running out of gasoline or oil after postoffice hours, to say nothing of having to hunt the sub-stations and wait in line, would take most of the joy out of motoring.

That this is not an overdrawn picture is attested by the definite threat of the oil administration if the industry does not come to time. It is a very real danger.

Bureaucracy, like autocracy, when thwarted or obstructed, tends to increased restriction, to more forcible suppression in the hope of crushing opposition. Hence its constant argument for additional authority, for more power, and consequently for more jobs and larger appropriations.

If the oil producing states and the industry continue to wait for developments this is the only development they are likely to see, absolute control from well to pump. If it is to be averted a definite substitute line of action must be put forward.

World Oil Review

A glance through the World Review of Oil Activities in 1934 published in this issue of The Oil and Gas Journal will show how vigorously foreign nations are seeking to assure a supply of oil products.

While some of the effort is due to anxiety about a reserve of oil in case of war there is at the same time a universal desire to increase efficiency in industry and transportation as America has done. It is realized that this will be possible only through oil-powered machines.

In this connection it is interesting to note as Mr. Garfias has pointed out that there has been an almost steadily rising trend in the consumption of gasoline outside the United States during the past five years despite the world depression. In fact, there are predictions that the largest increases in motor fuel in the next few years' consumption will be in countries abroad.

Motorization across the sea has been retarded not only by a lower level of buying power but also by heavy duties and taxes on both automotive cars and trucks and on gasoline. Some of the governments most eager to speed up domestic industries are beginning to see the contradiction of handicaping motorization by prohibitive taxation at the very time when they are seeking to expand the use of machines.

Should these countries decide to reduce taxes on petroleum products and automobiles, as is now being contemplated, their gain in demand for cars and petroleum products might rival that of the United States in recent years.

American exporters of automobiles and oil products have found several instances of discrimination where there are possibilities of negotiating reciprocal agreements. With the expansion of refining countries this becomes more important to American oil exporters who have reason to fear more widespread discrimination.

This is a matter of importance to manufacturers of oil industry equipment also. In the case of oil field, refining, pipe line and marketing equipment there is no question that we have perfected the best equipment at the lowesl prices.

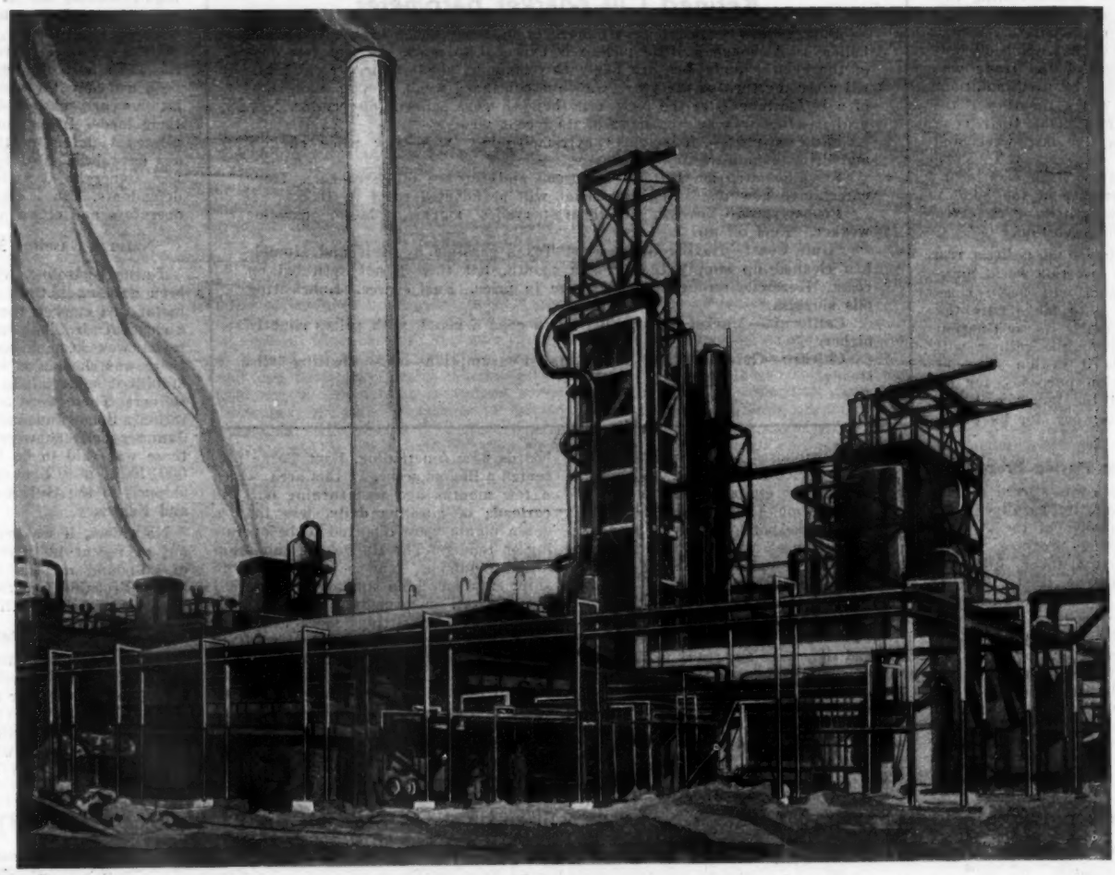
This business would naturally come to the most efficient producers unless artificial barriers are erected in favor of other countries. Some of the oil companies which have had to build refineries and pipe lines with equipment made in foreign countries have had occasion to comment upon quality and ultimate cost.

Experience with American products is the most influential factor in our favor. It is a convincing argument against discrimination through either taxation or regulation and a powerful reason for reciprocal agreements with the United States.

The rapidly increasing interest abroad in oil supplies and in motorization makes this a fitting time to negotiate such agreements. The American oil industry, automotive industry and oil equipment industry should seek united effort to emphasize the importance of the issue at Washington. Expansion of our foreign markets for these products would be a very material factor in hastening American recovery.

In presenting the Annual World Review of Oil Activities in this issue, The Oil and Gas Journal wishes to express appreciation to the various foreign governments and companies which have assisted in the compilation of the material.

TRIAL AND ERROR HAS BEEN REPLACED BY RESEARCH AND KNOWLEDGE



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Group 3 Market Showing How Slowly a Thing Can Move Without Coming to a Full Stop

By T. F. SMILEY

Following virtually a four-day holiday the gasoline market in the Oklahoma (Group 3) area was demonstrating this week how slowly an object can move without coming to a full stop.

Nobody wanted to buy. Nobody was trying to sell. Those of the trade who saw they were going to need additions to their stocks to carry them over the Christmas season had made their commitments by Friday of last week and gone hunting.

Buying for Christmas itself was inconsequential. The character of the holiday is such that it makes little or no extra demand on the filling station.

There was expectation of a little rise in the buying curve late this week. Shipment on these orders will begin close enough to January 1 to make sure the material does not reach its destination before that date. Thus the refiner will not have to include it in his year-end inventory for taxation purposes, for he won't have it. And the buyer will not include it in his inventory, for he won't have it either.

Refined Oil Market Barometer

Sluggishness settled over all markets in consequence of the **Christmas** holidays. Although a little pickup is expected to mark the last few days of the month, quotations are likely to remain at about their present levels till after the turn of the year. Gasoline continued weak, though some signs of a better tone after the New Year holiday were believed discernible. Natural gasoline was holding most of its recent vigor.

Mid-Continent—All markets extremely dull, with few price changes and little to indicate new trends.

Gasoline situation better. Kerosene and furnace oils stronger. Hope entertained new marketing agreement will be adopted early in 1935.

Pennsylvania—Year-end dullness pervades market. Motor gasoline weaker. Fuel oil up.

Gulf Coast—Buying up of East Texas gasoline by Gulf and Humble has cleaned up supply there for a month, but this is not reflected on coast. Kerosene strong but no change in price. Fuel scarce. Lubricating oils sluggish.

California—Market firm. Fuel oil in good demand, with prices slightly higher.

Chicago—Gasoline still uncertain. Consumption off. Heating oils steady.

Miniature Gasoline Buying Program

A flurry of interest was stirred in the last week by a miniature gasoline purchasing project suggestive of the P. and C. Committee's buying program which entered into rest last October. Like its more ambitious prototype, it started out all right, but died young. However, it may have done some good.

Reports that independent refiners in North Central Texas and a few in Oklahoma had accumulated distress stocks of gasoline that were becoming a threat to an already weak market prompted several of the larger companies to investigate. Response to their inquiries was reported to have been to the effect that the owners of the supposedly distress stocks did not care to sell at 3½ cents, which was about the ruling quotation. Some wanted 3¾ cents, some 4 and some 4⅛. The excursion of the potential buyers resulted in few purchases, but it inclined some observers to the opinion that the market was gaining a little strength.

The reason the independents manifested so little interest is said to have been that deliveries would be over at least 30 days and they were not ready to tie themselves up with orders that scarcely would cover the cost of manufacture so long as they felt there was some chance of a better market and higher prices before deliveries would be completed.

With both federal and state tender boards now functioning. East Texas presented a lifeless scene. In this area, which a few months ago was turning out 240 carloads of gasoline daily, less than a dozen plants were reported to be operating on tenders. The Railroad Commission order requiring tenders for intrastate shipments has been applied with strictness to rail movements since the state board began its sittings more than two weeks ago, and it appeared this week as though attempts to move material out of East Texas to points inside the State without tenders were becoming so hazardous that they would not be persisted in much longer.

Until a few days ago streams of trucks from Dallas, Fort Worth and more distant points in Texas were reported to be moving into the East Texas area each night, loading up at small independent refineries and then hurrying away. The other day, however, almost 100 trucks driving out of Kilgore were stopped and less than half of them are said to have been armed with tenders. Many of these latter went back to refineries and dumped their loads. Injunction suits directed at alleged violators of the state tender order have been filed by the State Attorney General's department, naming 453 defendants. Truck drivers, filling station operators and others were in the list.

Natural Gasoline Market Cheerful

Natural gasoline, which for weeks has been dancing blithely ahead of a sullen motor fuel market, continued to maintain a cheerful air. The demand for 26-70 material was keeping up fairly well, but there was slackening in the movement of stabilized material to both jobbers and refiners. There were few changes in quotations. Some unusually large orders for January delivery were recorded. One of these was said to be for more than 50,000 bbls. of 12-pound material to be shipped to the Gulf Coast over January and February.

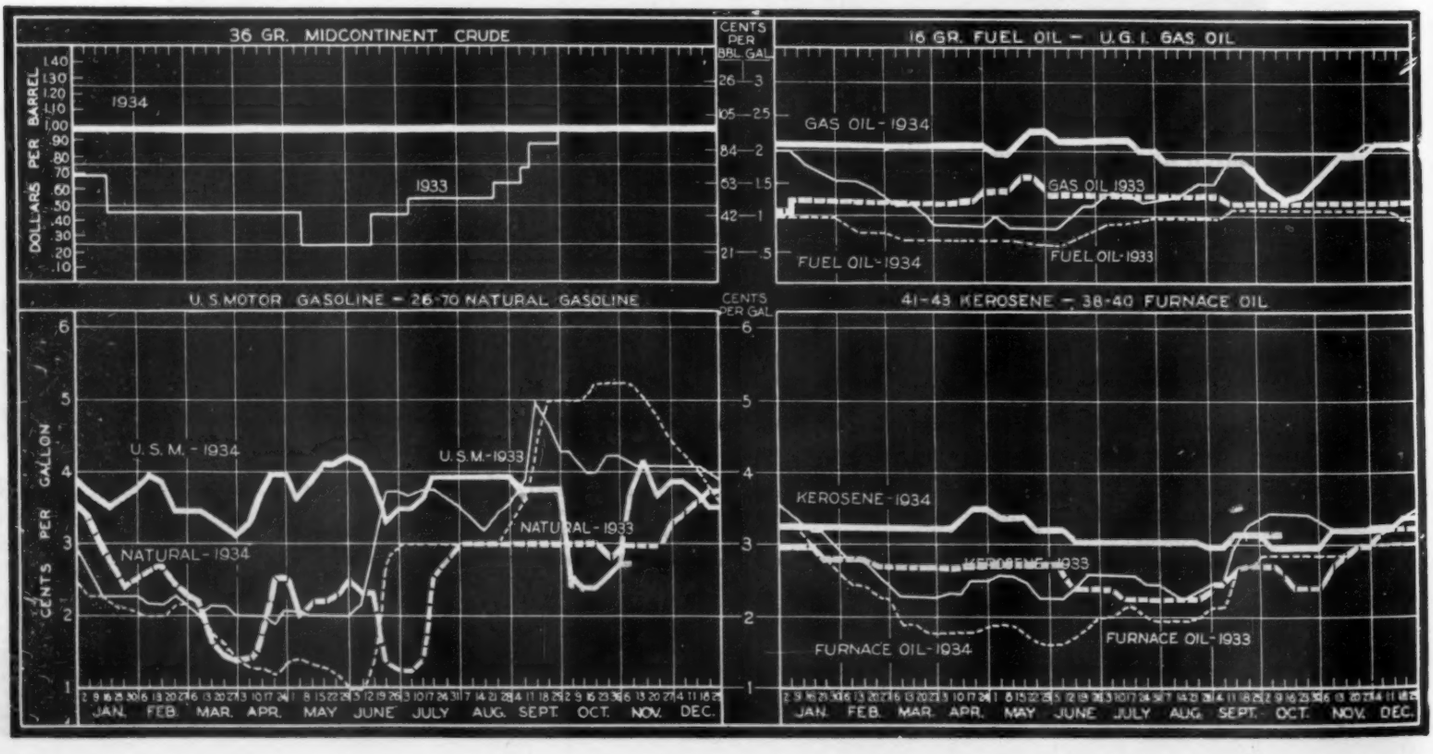
No orders, it was said, had yet grown out of recent inquiries for two cargoes of 20-pound material for February delivery. Probability of the orders continued to exert a buoyant influence.

Distillates Holding Ground

Although the distillates held their ground in point of price, there was reported to be a slightly softening tendency in the demand. The heavier buyers of furnace oils in northern areas filled their storage last summer when supplies were

(Continued on Page 202)

Representative Mid-Continent Quotations on Crude Oil and Refined Products Basis Oklahoma (Group 3)



Slow Market for Remainder of Year in Prospect on East Coast, With Gasoline Prices Higher

By C. O. WILLSON
New York Bureau, The Oil and Gas Journal

NEW YORK, Dec. 24. — With practically all trading suspended from Friday evening of last week to Wednesday of this week prices on petroleum products at refineries show no important changes from a week ago. A majority of the trade were of the opinion that this situation would continue the remainder of the month.

In the gasoline end the local situation was improved when all the major distributors advanced gasoline retail prices in metropolitan New York to 16 cents on Friday, including 3 cents state and 1 cent federal taxes. This change involved an advance of 2½ cents in Queens and Brooklyn and one-half cent in the remainder of metropolitan New York. This 16-cent price for the regular branded grades of the major companies is 1 cent less than the prevailing price through the summer and fall months. It was believed that it would continue at the present level until tank car prices at refineries were advanced so that they would support higher quotations to consumers.

The tank car prices in New York Harbor for New York delivery are unchanged from the levels of the last several weeks. These prices are 5¼ cents for low octane, 5½ cents for middle octane, 5¾ cents for 65 octane and above and 6 cents for the regular branded grades of the major refiners containing Ethyl fluid. For New Jersey delivery as explained last week, prices were advanced to 6¼ cents for middle octane and 6½ cents for 65 octane and above. It was hoped that the New York prices would be advanced to these levels over the past week but nothing developed. As the situation now stands the New Jersey prices which are posted by several major and independent companies are more or less nominal, there being little open market trading between jobbers and refiners at the higher levels. To date, the recent advances to normal in the northern New Jersey retail markets are holding. In that territory the third-grade gasoline has been eliminated as a price factor by the larger distributors and the independents offering local brands are selling 1 cent under the regular grade schedules. In metropolitan New York the third-grade is being continued by two or three companies with the price one-half cent under the regular branded grades. The products of the independent jobbers are selling 1 cent below the regular grades.

New Basis for 1935

It is predicted in the trade that early in 1935 and possibly the latter part of this week some new marketing practices will be announced by the major companies which will be the basis for 1935 operations. As has been explained in these columns from time to time over the past 60 days this matter of trade practices involving differentials to be allowed the various types of wholesale and retail gasoline customers has been under consideration almost continuously over that period.

The objective in brief is to standardize practices which directly or indirectly effect prices. This involves the margin to be guaranteed jobbers operating on a tank car basis, the dealer differentials, discounts to commercial consumers and a number of other practices in merchandising. The theory is that if these practices can be made uniform, then the abuses which bring price wars and other unprofitable operations in marketing will cease.

Anyone familiar with marketing conditions in this territory knows what a tremendous task has confronted those who are trying to work out plans which will be approved by all paritcipants and at the same time be satisfactory to government representatives and consumers so that they can be made a part of the oil industry's code. Marketing practices among individual units vary widely and naturally all have tried to protect those divisions in marketing in which they are most interested. Some companies sell a large part of their gasoline output to jobbers while others have practically no jobbing business. At least three companies have large investments in company-owned station facilities and are anxious to increase the gallonage of these outlets. Other concerns have small investments in this type of facilities and distribute almost exclusively through small dealers whose business they seek to protect. Certain companies are much interested in the commercial business to which they look for outlets for a large part of their total gallonage. Other companies have little commercial gallonage involved and insist that this class of buyers should be given little or no price concessions over other customers.

When it comes to costs, covering these various methods of distribution, the situation is equally complicated. A company specializing in one type of distribution naturally has lower costs in that phase of marketing than most of its competitors. This situation as to differences in the merchandising efforts of individual companies obviously does not lend itself to standardization in practices and it is known that the efforts to reach agreements have appeared hopeless at times. Progress has been made, however, and it is thought that action will be taken in several matters in the immediate future following in part the plans already adopted in the Middle West.

Assuming that this standardization in certain marketing practices will materialize as hoped, there is the further prediction in the trade that tank car prices at most Atlantic Seaboard refineries and water terminals will advance one-half or more cents per gallon early in January. This action is of course partly dependent on the general open tank car markets throughout the entire country with the situation in the Gulf Coast and East Coast refining areas of special importance in the Atlantic Seaboard markets. This situation is also being analyzed by market observers with a majority willing to hazard the prediction that tank car markets will show improvement in 1935 over 1934.

Kerosene Advances

Kerosene tank car quotations in the New York Harbor area as posted by several major companies advanced to 6 cents on Saturday an increase of one-fourth cent. Other companies were continuing the 5¾-cent price. The one-fourth cent advance was made effective at several points along the Atlantic Seaboard by companies which increased to 6 cents in New York Harbor.

This product unquestionably occupies a strong market position in this territory. Only two refiners are said to have supplies in excess of their own requirements and they are not offering material freely, apparently expecting higher prices. Buyers at the Gulf Coast are finding the market as tight there as here.

It is contended by some that a situation in which regular grade gasoline sells at 5½ cents and kerosene at 5¾ to 6 cents has its incongruous aspects and cannot continue indefinitely. Either the gasoline must go up or the kerosene come down. There is flexibility at most refineries which permits the operators to increase kerosene production at the expense of gasoline yields. By making lower endpoint gasoline they can take these heavy ends of the gasoline and add them to the kerosene cut. Such a practice tends to increase the gravity of the kerosene stream and lower the endpoint of the gasoline. Within certain limits this practice tends to improve the quality of both products.

It is known that two operators at least have shifted their operations to take care of the increasing demand in the face of a seasonal decline in gasoline consumption. With this development on a wide scale a possibility both here and other sections operating with satisfactory kerosene crudes, certain sellers are inclined to go slow on making predictions of further advances in the already relatively high kerosene quotations.

Prices

Prices on furnace oils, gas oils and fuel oils are unchanged from last week. The furnace oil consumer demand has improved and some feel that higher tank car prices are in prospect. Others contend that advances in tank wagon prices to consumers must materialize before the refinery quotations can be advanced. At many points the spread allowed the distributor in selling furnace oils is less than 1½ cents per gallon.

Steam refined and bright stocks, both western and Pennsylvania products, are slow in this market. Wax prices are steady.

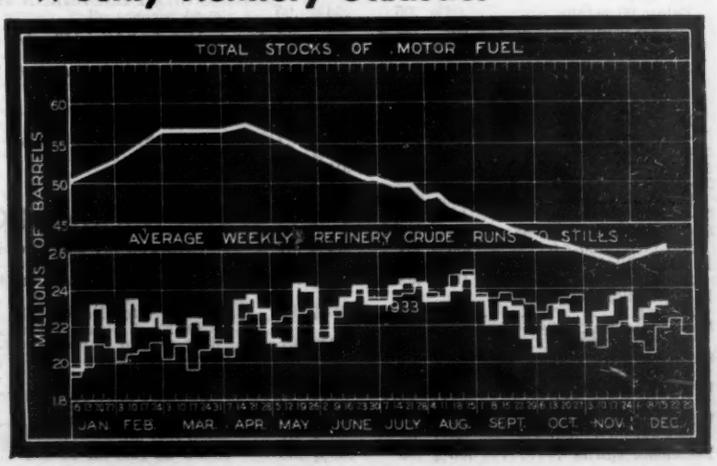
MEKLER ADDRESSES A.I.M.E.

CHICAGO, Dec. 22.—L. A. Mekler, combustion engineer of Universal Oil Products Co., addressed the Chicago section of the American Institute of Mining and Metallurgical Engineers at the Engineers Club in Chicago last night.

The subject of Mr. Mekler's talk was temperature and corrosion-resisting alloys for the petroleum industry, emphasizing cracking tube materials.

American Petroleum Institute Weekly Refinery Statistics

Refinery report not available on account of holiday.


TOTAL STOCKS OF MOTOR FUEL
AVERAGE WEEKLY REFINERY CRUDE RUNS TO STILLS
MILLIONS OF BARRELS
1933
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement except as otherwise noted

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents on lubricating oils.

Refinery Gasolines

OKLAHOMA (Group 3)—	Dec. 26		Dec. 18	
U. S. Motor grades:				
Below 63 octane	.03½	.03¾	.03½	.03¾
63-70 octane	.04⅜	.04⅝	.04⅜	.04⅝
60-62 400 grades:				
Below 63 octane	.03½	.03¾	.03½	.03¾
63-70 octane	.04⅜	.04⅝	.04⅜	.04⅝
64-66 375	.04	.04¼	.04	.04¼
68-70 360	.04¼	.04⅜	.04¼	.04⅜
NORTH TEXAS—				
U. S. Motor grades:				
Below 63 octane	.03½	.03¾	.03½	.03¾
63-70 octane	.04¼	.04½	.04¼	.04½
60-62 400	.03½	.03¾	.03½	.03¾
64-66 375	.03¾	.04	.03¾	.04
NORTH LOUISIANA (Ark., N. La. & Miss. del.)—				
U. S. Motor grades:				
Below 63 octane	.04⅛	.04¼	.04⅛	.04¼
63-70 octane	.05	.05¼	.05	.05¼
60-62 400	.04¼	.04½	.04¼	.04½
68-70 360	.05	.05¼	.05	.05¼
ARKANSAS (Ark., N. La. & Miss. del.)—				
U. S. Motor grades:				
Below 63 octane	.04⅛	.04¼	.04⅛	.04¼
63-70 octane	.05	.05¼	.05	.05¼
CHICAGO (based on Oklahoma Group 3)—				
U. S. Motor grades:				
Below 63 octane	.03½	.03¾	.03½	.03¾
63-70 octane	.04⅜	.04¾	.04½	.04¾
60-62 400	.03½	.03¾	.03½	.03¾
64-66 375	.04	.04¼	.04	.04¼
68-70 360	.04¼	.04½	.04¼	.04½
Aviation fighting grade	.04⅞	.05	.04⅞	.05
PENNSYLVANIA (inland refineries)—				
58-60 U. S. Motor:				
Below 60 octane	.04⅝	.04¾	.04¾	.04⅞
60-64.9 octane	.05⅛	.06⅛	.05⅛	.06⅛
65-70 octane	.06¼	.06⅞	.06¼	.06⅞
68-70 350	.06⅛	.06¼	.06⅛	.06¼
CALIFORNIA (domestic movement)—				
54-58 U. S. Motor	.07	.08	.07	.08
58-60 400	.08	.09	.08	.09
EAST COAST—				
U. S. Motor, below 60 octane:				
*New York	.05¼		.05¼	
Baltimore	.05¼		.05¼	
U. S. Motor, 60-64 octane:				
*New York (Bayonne)	†.05½		†.05½	
Philadelphia	.05½		.05½	
Boston	.05½		.05½	
Baltimore	.05½		.05½	
Charleston, S. C.	.05½		.05½	
U. S. Motor, 65 and above:				
*New York	‡.05¾		‡.05¾	
Philadelphia	.05¾		.05¾	
Boston	.05¾	.06	.05¾	.06
Baltimore	.05¾		.05¾	
Charleston, S. C.	.05¾		.05¾	

*All grades of gasoline one-fourth cent less for small barge shipments.
†For New Jersey delivery, 6¼ cents.
‡For New Jersey delivery, 6½ cents.

GULF COAST (domestic)—				
U. S. Motor:				
Below 60 octane	.04¾	.05	.04¾	.05
60-64.9 octane	.05	.05¼	.05	.05¼
65 octane and higher	.05¼		.05¼	

Naphthas

	Dec. 26		Dec. 18	
PENNSYLVANIA (inland refineries)—				
50-52 (blending)	.04⅝		.04⅝	.04⅞
52-54 450 (blending)	.04⅝		.04¾	.04⅞
54-56 450 (blending)	.04⅝		.04¾	.04⅞
50-52 450 (blending)	.04⅝		.04¾	.04⅞
CHICAGO (based on Oklahoma Group 3)—				
50-52 450 (blending)	.03¾	.04	.03¾	.04
Cleaners' naphtha, 56-58 gr., 200 i.b.p., 320 e.p.	.06¾	.07	.06¾	.07
Lacquer diluent, 180 i.b.p., 250 e.p.	.07¾	.08	.07¾	.08
Lacquer diluent, 140 i.b.p., 200 e.p.	.08¾	.09	.08¾	.09
Rubber solvent, 68-70 gr., 100 i.b.p., 300 e.p.	.06¾	.07	.06¾	.07
Stoddard solvent, 300 i.b.p., 410 e.p., over 33° flash	.06¼	.06½	.06¼	.06½
Pet. thinner, 290-300 i.b.p., 415 e.p., over 33° flash	.06¼	.06½	.06¼	.06½
V.M.&P. naphtha, 56-58 gr., 190-200 i.b.p., 330 e.p.	.06¾	.07	.06¾	.07
Petroleum spirits	.05¾	.06	.05¾	.06

Natural Gasoline

OKLAHOMA (Group 3)—	Dec. 26		Dec. 18	
Grade 26-70	.03¾		.03¾	
Grade 18-55	.04⅜	.04½	.04⅜	.04½
Low vapor pressure grades:				
*14 lb. v.p. (max.)	.05	.05⅛	.05	.05⅛
*12 lb. v.p. (max.)	.05¼	.05½	.05¼	.05½
NORTH TEXAS—				
Grade 26-70	.03½		.03½	
Grade 18-55	.04⅛	.04¼	.04¼	.04⅜
Low vapor pressure grades:				
*14 lb. v.p. (max.)	.04⅝	.04¾	.04⅝	.04¾
*12 lb. v.p. (max.)	.04⅞	.05	.04⅞	.05
NORTH LOUISIANA (Ark., N. La. & Miss. del.)—				
Grade 26-70	.04	.04⅛	.04	.04⅛
CALIFORNIA—				
75-85 375	.06½	.06¾	.06½	.06¾

*Prices nominal, virtually no spot market.

Kerosenes

(All kerosenes water white)

OKLAHOMA (Group 3)—	Dec. 26		Dec. 18	
41-43	.03⅜	.03½	.03⅜	.03½
42-44	.03½	.03⅝	.03½	.03⅝
NORTH TEXAS—				
40-41	.03⅛	.03¼	.03⅛	.03¼
41-43	.03⅜	.03½	.03⅜	.03½
NORTH LOUISIANA (Ark., N. La. & Miss. del.)—				
41-43	.03⅜		.03⅜	
ARKANSAS (Ark., N. La. & Miss. del.)—				
41-43	.03⅜	.03½	.03⅜	.03½
PENNSYLVANIA (inland refineries)—				
45	.04⅜	.04½	.04⅜	.04½
46	.04½	.04⅝	.04½	.04⅝
47	.04⅝	.04¾	.04⅝	.04¾
CHICAGO (based on Oklahoma Group 3)—				
41-43	.03⅜	.03½	.03⅜	.03½
42-44	.03½	.03⅝	.03½	.03⅝
CALIFORNIA (Pacific Coast consumption)—				
38-40 high burning test	.04¾	.05¼	.04¾	.05¼
NEW YORK (Bayonne, N. J.)—				
41-43	.05¾	.06	.05⅝	.05¾
GULF COAST (domestic)—				
41-43	.04½	.04⅝	.04½	.04⅝

Petroleum Coke

(Prices per ton f.o.b. refineries in Chicago area)
(Refineries will absorb freight to 80 cents a ton)

	Dec. 26	Dec. 18
Still run	6.00	6.00
Direct from still	7.00	7.00
Egg, nut, pea	8.25	8.25
Lump	8.25	8.25

Furnace Oils and Tractor Fuels

(Zero cold test under 190° flash and good odor)

OKLAHOMA (Group 3)—	Dec. 26		Dec. 18	
32-36 straw	.03⅛	.03¼	.03⅛	.03¼
36-38 straw	.03⅛	.03¼	.03⅛	.03¼
38-40 straw	.03¼	.03⅜	.03¼	.03⅜
38-40 prime white	.03⅜	.03½	.03⅜	.03½
NORTH TEXAS—				
38-40 straw	.03¼	.03⅜	.03¼	.03⅜
NORTH LOUISIANA (Ark., N. La. & Miss. del.)—				
36-40 furnace oil	.03⅜	.03¼	.03⅜	.03¼
ARKANSAS (Ark., N. La. & Miss. del.)—				
32-36 furnace oil	.03⅛	.03¼	.03⅛	.03¼
CHICAGO (based on Oklahoma Group 3)—				
32-36 straw	.03¼	.03⅜	.03¼	.03⅜
38-40 straw	.03¼	.03⅜	.03¼	.03⅜
38-40 prime white	.03⅜	.03½	.03⅜	.03½
NEW YORK (Bayonne, N. J.)—				
No. 1	.05½	.05¾	.05½	.05¾
No. 2	.04¾		.04¾	
No. 4	.04¾		.04¾	

Gas Oil, Diesel Oil and Fuel Oil

(Gas oil per gal., Diesel and fuel oils per bbl.)

OKLAHOMA (Group 3)—	Dec. 26		Dec. 18	
32-36 gas oil, cracking stock	.02⅛	.02¼	.02⅛	.02¼
U.G.I. gas oil	.02½	.02¼	.02½	.02¼
32-36, zero to 15 gas oil	.02¾	.02⅞	.02¾	.02⅞
28-30, No. 3 burner oil	1.10	1.15	1.10	1.15
26-30, zero to 10 fuel oil	.95	1.00	.95	1.00
24-26 fuel oil	.77½	.80	.77½	.80
20-22 fuel oil	.72½	.75	.72½	.75
Below 16 fuel oil	.60	.62½	.60	.62½
NORTH TEXAS—				
32-36 gas oil, industrial	.02⅛	.02¼	.02⅛	.02¼
22-26 fuel oil	.67½	.70	.67½	.70
Below 20 fuel oil	.60	.62½	.60	.62½
NORTH LOUISIANA (Ark., N. La. & Miss. del.)—				
30-32 gas oil, zero	.03⅛	.03¼	.03⅛	.03¼
14-16 fuel oil	.70	.75	.70	.75
ARKANSAS (Ark., N. La. & Miss. del.)—				
30-32 gas oil, zero	.03⅛	.03¼	.03⅛	.03¼
32-36 gas oil	.03	.03⅛	.03	.03⅛
14-16 fuel oil	.70	.75	.70	.75
CHICAGO (based on Oklahoma Group 3)—				
32-36 gas oil, industrial	.02	.02¼	.02	.02¼
28-30 zero to 10, fuel oil	1.02½	1.05	1.00	1.05
26-28 zero to 10, fuel oil	.92½	.95	.90	.92½
22-26 zero to 10, fuel oil	.82½	.85	.80	.82½
18-22 zero to 10, fuel oil	.67½	.70	.67½	.70
Below 18 fuel oil	.57½	.62½	.57½	.62½

Note: Fuel oils of more than 40 cold test generally 5 to 15 cents per barrel in all these areas.

PENNSYLVANIA (inland refineries)—				
30-40	.03¾	.04	.03½	.03¾
CALIFORNIA—				
Los Angeles:				
30-34 gas oil per bbl.	1.10	1.26	1.10	1.26
27 plus Diesel	1.10	1.15	1.10	1.15
27 plus Diesel (bunkers)	1.13	1.20	1.13	1.20
12-16 (bunkers at tidewater)	.82½	.87	.82½	.85
10-16 (cargo lots)	.70	.75	.66	.75
12-17 (tank cars)	.65	.80	.60	.80
San Joaquin Valley:				
10-18 (tank cars)	.60	.72½	.55	.70
San Francisco:				
27 plus Diesel per bbl.	1.15	1.20	1.15	1.25
27 plus Diesel (bunkers)	1.19		1.19	
10-16 (bunkers)	.89		.89	
GULF COAST—				
28-30 gas oil	.03½	.03⅝	.03½	.03⅝
28-30 Diesel (bunkers)	1.70		1.70	
Bunker C (bulk cargoes)	.85	.90	.85	.90
Bunker C (bunkers)	.95	1.00	.95	1.00
NEW YORK (Bayonne, N. J.)—				
27 plus, gas oil	.04½	.04¾	.04½	.04¾
28-30, Diesel (lighterage 6½ cents per bbl.)	1.89		1.89	
28-30 Diesel (tank cars)	.04¾		.04¾	
*Bunker C (to ocean-going ships in N. Y. harbor)	1.15		1.15	

*Lighterage charge 5 cents per barrel additional.

Neutral Oils

(Vis. at 100° F. except Pennsylvania, and color N.P.A.)

OKLAHOMA (Group 3)—	Dec. 26		Dec. 18	
Zero to 10 Cold Test:				
150-3	.10		.10	
180-3	.11¼		.11¼	
180-4	.10¾		.10¾	
200-3	.11¾		.11¾	
200-4	.11¼		.11¼	
240-3	.13¾		.13¾	
240-4	.13¼		.13¼	
280-3	.14¾		.14¾	
280-4	.14		.14	
300-3½	.15¼		.15¼	
400-4	.17¼		.17¼	
100-2 paraffin oil	.05¾		.05¾	
15-20 Cold Test:				
200-3	.10¾		.10¾	
200-4	.10¼		.10¼	
240-3	.12¾		.12¾	
240-4	.12¼		.12¼	
280-3	.13¾		.13¾	
280-4	.13		.13	
GULF COAST—				
Pale Oils:				
200-3	.07¼	.07½	.07¼	.07½
300-3	.07½	.08	.07½	.08
500-3½	.08½	.09	.08½	.09
750-3½	.09	.09¼	.09	.09¼
1,200-3½	.09½	.09¾	.09½	.09¾
2,000-4	.09¾	.10	.09¾	.10
Red Oils:				
200-5-6	.07	.07¼	.07	.07¼
300-5-6	.07¼	.07½	.07¼	.07½
500-5-6	.08	.08½	.08	.08½
750	.08½	.09	.08½	.09
1,200-5-6	.09¼	.09½	.09¼	.09½
CALIFORNIA—				
Pale Oils:				
100-2½-3	.12½	.14½	.12½	.14½
200-2½-3	.12½	.14½	.12½	.14½
300-3-3½	.12½	.14½	.12½	.14½
350-3-4	.12½	.14½	.12½	.14½
400-3-4	.12½	.14½	.12½	.14½
450-3-4	.12½	.14½	.12½	.14½
550-3-4	.12½	.14½	.12½	.14½
600-3-4	.12½	.14½	.12½	.14½
Red Oils:				
200-4-5	.12½	.14½	.12½	.14½
300-5-6	.12½	.14½	.12½	.14½

350-5-6	.12½	.14½	.12½	.14½
400-5-6	.12½	.14½	.12½	.14½
450-5-6	.12½	.14½	.12½	.14½
500-5-6	.12½	.14½	.12½	.14½
600-5-6½	.12½	.14½	.12½	.14½
700-6½ plus	.12½	.14½	.12½	.14½
750-6½ plus	.12½	.14½	.12½	.14½
900-6½ plus	.12½	.14½	.12½	.14½
PENNSYLVANIA—				
150 vis. at 70° F., 3 color, 400-405 flash:				
Zero pour test	.24	.24½	.24	.24½
10 pour test	.23	.23½	.23	.23½
15 pour test	.22½	.23	.22½	.23
25 pour test	.22	.22½	.22	.22½
180 vis. at 70° F., 3 color:				
25 pour test	.25	.25½	.25	.25½
200 vis. at 70° F., 3 color:				
Zero pour test	.31	.31½	.31	.31½
10 pour test	.30	.30½	.30	.30½
15 pour test	.29½	.30	.29½	.30
25 pour test	.28	.29	.28	.29

Bright and Steam Refined Stocks

OKLAHOMA (Group 3)—	Dec. 26		Dec. 18	
Bright Stocks:				
190-200 D	.16½		.16½	
150-160 D, 0-10	.13½		.13½	
150-160 D, 10-25	.13		.13	
150-160 24-40	.12½		.12½	
150-160 E	.12½		.12½	
Steam refined:				
630 light green (treated)	.08	.08½	.08	.08½
600 light green (untreated)	.06	.08	.06	.08
600 dark green (untreated)	.04½	.07	.04½	.07
PENNSYLVANIA—				
Bright Stocks (Pennsylvania grade, No. 8 color, 145-50 at 210; 540-550 flash):				
10 pour test	.19½	.20½	.19½	.20½
15 pour test	.18½	.19½	.18½	.19½
20 pour test	.18	.20	.18	.20
25 pour test	.15½	.16½	.15½	.16½
Steam refined:				
600	.09	.10	.09	.10
650	.12	.13	.12	.13
600 Pennsylvania flash	.13	.14	.13	.14
630 flash	.17	.18	.17	.18
600 Warren E filtered	.13	.14	.13	.14

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—	Dec. 26		Dec. 18	
124-126 white crude scale	.03⅛	.03¼	.03⅛	.03¼
PENNSYLVANIA—				
122-124	.0325	.0330	.0325	.0330
124-126	.0330	.0335	.0330	.0335
NEW YORK—				
Wax (a.m.p.) in bags fully refined:				
120-122	.0420	.0430	.0420	.0430
123-125	.0440	.0460	.0440	.0460
125-127	.0445	.0470	.0445	.0470
130-132	.05	.0510	.05	.0510
133-135	.0545	.0570	.0545	.0570
135-137	.0570	.0595	.0570	.0595
124-126 crude scale	.0305	.03125	.0305	.03125
Petrolatum in barrels in carload lots:				
Dark green	.01⅞		.01⅞	
Amber	.02⅞	.03	.02⅞	.03
Extra amber	.03	.03½	.03	.03½
Lily white	.06⅝	.06¾	.06⅝	.06¾
Snow white	.07¾	.07⅞	.07¾	.07⅞
Cream	.05⅝	.05¾	.05⅝	.05¾
CHICAGO (f.o.b. switching district)*—				
122-124 wax	.0490	.0500	.0490	.0500
125-127 wax	.0515	.0525	.0515	.0525
127-129 wax	.0530	.0540	.0530	.0540
130-132 wax	.0590	.0600	.0590	.0600
132-134 wax	.0615	.0625	.0615	.0625

*Cents per pound on carlot orders in burlap bags of 225 lbs. approx. Add 3° F. a.m.p.

Export Prices

GASOLINE

GULF COAST—	Dec. 26		Dec. 18	
U. S. Motor	.04⅛	.04¼	.04⅛	.04¼
60-62 400	.04¼	.04⅝	.04¼	.04⅝
61-63 390	.04½	.04⅝	.04½	.04⅝
64-66 375	.04¾	.04⅞	.04¾	.04⅞
LOS ANGELES, CALIF.—				
U. S. Motor grades:				
53-55 octane	.04	.04¼	.04	.04¼
55-65 octane	.04¼	.04½	.04¼	.04½
65-67 octane	.04½	.04¾	.04½	.04¾
67-69 octane	.04¾	.05	.04¾	.05
Above 69 octane	.05	.05¼	.05	.05¼
58-60 400 endpoint	.04¾	.05½	.04¾	.05½

KEROSENE

GULF COAST—				
41-43 prime white	.04¼	.04⅜	.04¼	.04⅜
41-43 water white	.04½	.04⅝	.04½	.04⅝
44 water white	.04¾		.04¾	
LOS ANGELES, CALIF.—				
41-43 water white	.04½	.04¾	.04½	.04¾

LUBRICANTS

NEW YORK (f.a.s. in bbls.)—				
Cylinder Stocks:				
600 Warren E	.19	.20	.19	.20
600 S.R. unfiltered	.14½	.15	.14½	.15
650 S.R. unfiltered	.17	.18	.17	.18
600 flash S.R.	.18	.18½	.18	.18½
630 flash S.R.	.22½	.23	.22½	.23
Bright Stocks:				
8 color	.22½	.23	.22½	.23
6½ plus color, in dilution	.21	.21½	.21	.21½

NEUTRAL OILS

200-3 color	.34½	.35	.34½	.35
150-3 color	.28	.29	.28	.29

PARAFFIN WAX (Fully Refined)

NEW YORK (prices per pound):				
120-122 a.m.p.	.0405	.0425	.0405	.0425
123-125 a.m.p.	.0435	.0455	.0435	.0455
125-127 a.m.p.	.0440	.0465	.0440	.0465
128-130 a.m.p.	.04¾	.0490	.04¾	.0490
130-132 a.m.p.	.0495	.0505	.0495	.0505
133-135 a.m.p.	.0540	.0565	.0540	.0565
135-137 a.m.p.	.0565	.0590	.0565	.0590

Crude Oil Gravity Table

Gravity—	Oklahoma and Kansas 1	North Texas, Central Texas and East Central Texas 2	North Louisiana and Arkansas 3	Gray County, Texas 4	Carson, Hutchinson and Moore Counties, Texas 5	Conroe, Texas 6	Salt Creek, Wyo. 7	Gulf Coast, Texas and Louisiana 8	Gulf Coast, Texas and Louisiana 9	Cotton Valley, Louisiana 10
Below 20	....	....	....	....	....	....	....	$.82	$.82	....
20-20.9	....	....	....	....	....	....	....	.84	.84	....
21-21.9	....	....	....	....	....	....	....	.86	.86	....
22-22.9	....	....	....	....	....	....	....	.88	.88	....
23-23.9	....	....	....	....	....	....	....	.90	.90	....
24-24.9	....	....	....	....	....	....	....	.92	.92	....
Below 25	*$.76	....	....	....	....	....	....	....	....	$.70
25-25.9	*.78	....	....	....	....	....	....	.94	.94	.72
26-26.9	*.80	....	....	....	....	....	....	.96	.96	.74
27-27.9	*.82	....	....	....	....	....	....	.98	.98	.76
28-28.9	*.84	....	....	....	....	....	....	1.00	1.00	.78
Below 29	.84	$.79	$.79	....	....	....	$.84	....	....	....
29-29.9	.86	.81	.81	....	....	....	.86	1.02	1.02	.80
30-30.9	.88	.83	.83	....	....	....	.88	1.04	1.04	.82
31-31.9	.90	.85	.85	....	....	....	.90	1.06	1.05	.84
32-32.9	.92	.87	.87	....	....	....	.93	1.08	1.06	.86
33-33.9	.94	.89	.89	....	....	....	.94	1.10	1.07	.88
34-34.9	.96	.91	.91	....	....	....	.96	1.12	1.08	.90
Below 35	....	....	....	$.79	$.69	....	....	....	....	....
35-35.9	.98	.93	.93	.81	.71	$1.09	.98	1.12	1.09	.92
36-36.9	1.00	.95	.95	.83	.73	1.11	1.00	1.12	1.10	.94
37-37.9	1.02	.97	.97	.85	.75	1.13	1.02	1.12	1.11	.96
38-38.9	1.04	.99	.99	.87	.77	1.15	1.04	1.12	1.12	.98
39-39.9	1.06	1.01	1.01	.89	.79	1.17	1.06	1.12	1.13	1.00
40 and over	1.08	1.03	1.03	.91	.81	1.19	1.08	1.12	1.14	1.02

Effective December 3, Panhandle Refining Co., purchasing oil in North Texas, posted below 29 degrees, 68 cents; 29-29.9 degrees, 70 cents, with 2 cents added for each additional degree up to 40 and over, at 92 cents.

*The following companies purchasing crude oil in Kansas or Oklahoma, or both, begin their price schedule: Below 25°, 76 cents; 25-25.9°, 78 cents, with 2 cents added for each degree upward to 40 and over at $1.08; Carter Oil Co., Magnolia Petroleum Co., Pure Oil Co., Rock Island Refining Co., Shell Petroleum Corp., Sinclair Prairie Oil Marketing Co., Skelly Oil Co., and Wilcox Oil & Gas Co. All others begin their schedules at below 29°, 84 cents, excepting Phiitex Oil Co., which begins with below 31° at 88 cents.

Column 1—Effective September 29, Texas Co. of Oklahoma; Stanolind Crude Oil Purchasing Co. in Kansas and Oklahoma; Anderson & Prichard, Inc., in Oklahoma; Bell Oil & Gas Co. in Oklahoma; Carter Oil Co. in Oklahoma and Kansas; Deep Rock Oil Co. in Oklahoma; Derby Oil Co. in Kansas; Globe Refining Co. in Oklahoma; Golden Rule Refining Co. in Kansas; Gypsy Oil Co. in Oklahoma and Kansas; Kanotex Refining Co. in Kansas; Magnolia Petroleum Co. in Oklahoma; Mid-Continent Petroleum Corp. in Oklahoma; National Refining Co. in Kansas and Oklahoma; Shell Petroleum Corp. in Kansas and Oklahoma; Sinclair Prairie Oil Marketing Co. in Kansas and Oklahoma; Texas Co. in Oklahoma; Tide Water Oil Co. in Oklahoma; Vickers Refining Co. in Kansas; Continental Oil Co. in Kansas and Oklahoma; Empire Pipe Line Co. in Oklahoma and Kansas; Phiitex Oil Co. in Kansas and Oklahoma; Pure Oil Co. in Oklahoma; Skelly Oil Co. in Kansas. Effective September 29, by White Eagle Oil Corp. in Kansas; October 1 by Barnsdall Refineries, Inc., in Oklahoma.

Column 2—Effective September 29, by Texas Co., Stanolind Crude Oil Purchasing Co., Humble Oil & Refining Co., Sinclair Prairie Oil Marketing Co., Gulf Pipe Line Co., Magnolia Petroleum Co., Bell Oil & Gas Co., Continental Oil Co. Effective September 29, in the Van Pool, Van Zandt County, Pure Oil Co. posted below 29°, 84 cents, with 2 cents added for each degree up to 40 and over at $1.08.

Column 3—Effective September 29, by Texas Co., Magnolia Petroleum Co., Gulf Refining Co. Effective December 22, Stanolind Oil & Gas Co. in Pine Island, Louisiana, and Marion County, Texas, posted below 29°, 79 cents, with 2 cents added for each degree up to 40 and over at $1.03. Effective March 17, 1934, by Standard Oil Co. of Louisiana and Louisiana Oil Refining Co. Starting with below 25°, 71 cents, adding 2 cents for each degree upward to 40 and over at $1.03.

Column 4—Effective September 29, by Texas Co., Humble Oil & Refining Co., Magnolia Petroleum Co., Sinclair Prairie Oil Marketing Co., and H. F. Wilcox Oil & Gas Co. On same day Phiitex Oil Co. posted below 31°, 71 cents, with 2 cents added for each degree up to 40 and over at 91 cents. Effective June 1, 1934, Texas Co. (see note above).

Column 5—Effective September 29, by Texas Co., Humble Oil & Refining Co., Gulf Pipe Line Co., Magnolia Petroleum Co., Wilcox Oil & Gas Co., Continental Oil Co. On same day, Phiitex Oil Co. posted below 31°, 61 cents, with 2 cents added for each degree upward to 40 and over at 81 cents. Effective June 1, 1934, Texas Co. (see note above).

Column 6—Effective September 29, by Humble Oil & Refining Co. and Tide Water Oil Co., and on September 30, by Texas Co., which on September 29 had posted a schedule of $1.07 to $1.12 with a 1-cent spread on each degree.

Column 7—Effective September 29, by Stanolind Oil & Gas Co.

Column 8—Effective September 29, by Humble Oil & Refining Co., Gulf Pipe Line Co., Shell Petroleum Corp., Pure Oil Co., Sinclair Prairie Oil Marketing Co. On October 3, Magnolia Petroleum Co. posted Lockport, Louisiana; 20-20.9°, 84 cents, with 2 cents added for each degree upward to 34 and over at $1.12, and in Cameron Meadows and Iowa, Louisiana; below 20°, 72 cents, with 2 cents added for each degree up to 34 and over at $1.02. These prices were 2 cents higher on each degree than Magnolia prices posted on September 29. Effective September 29, Shell Petroleum Corp. posted in Iowa, Louisiana, district: Below 20°, 70 cents, with 2 cents added for each degree upward to 34° and over at $1; and in Black Bayou and White Castle, Louisiana: Below 20°, 80 cents, with 2 cents added for each degree upward to 34° and over at $1.10.

Column 9—Effective September 30, Texas Co. (On September 29, Texas Co. had posted a schedule of 2 cents on each degree, but changed it on September 30.)

Column 10—Effective September 29, by Louisiana Oil Refining Co.

(California Crude Oil Prices on Page 59)

Crude Oil Prices

Oklahoma, Kansas, North Central and East Central Texas

East Texas $1.00
Corsicana (heavy) (June 17, 1933)* ..... .80
Other fields ..... (See gravity table)

Note—In East Texas, effective September 29, 1933, by Texas Co., Stanolind Crude Oil Purchasing Co., Humble Oil & Refining Co., Shell Petroleum Corp., Gulf Pipe Line Co., Tide Water Oil Co., Sinclair Prairie Oil Marketing Co., Magnolia Petroleum Co., Sun Oil Co., Panola Pipe Line Co., Empire Oil & Refining Co., and Atlas Pipe Line Co. posted 60 cents per barrel in East Texas, but on November 3 resumed its posted price of $1 per barrel, making it retroactive to October 22.

*Magnolia Petroleum Co.

West Texas

Crane, Upton, Crockett, Howard, Glasscock, Mitchell (Sept. 29, 1933) ..... $.70
Ector, Winkler and Pecos Counties and Lea County, New Mexico (Sept. 29, 1933) ..... .75
Pecos County, Yates shallow Pool (Sept. 29, 1933)* ..... .65
Jones and Fisher Counties*. See gravity table

Note—Effective September 29, 1933, by Humble Oil & Refining Co., Texas Co., Gulf Pipe Line Co., Shell Petroleum Corp., Magnolia Petroleum Co., and by Stanolind Oil & Gas Co. in Winkler County, Texas.

*Shell Petroleum Corp.

Gulf Coast

Grade A and Grade B specifications discontinued by leading buyers.
..... (See gravity table)
Tomball (see note)* $1.15
Livingston (Sept. 29, 1933)† 1.00
Cleveland (Jan. 11, 1934) 1.00
Greta (Sept. 29, 1933) ..... .85
Refugio, light ..... (See gravity table)
Refugio, heavy (Sept. 29, 1933)‡ ..... .85
Markham and High Island ..... (See Gulf Coast gravity table)
Conroe ..... (See Conroe gravity table)
Bosco, La. (Oct. 15, 1934)§ $1.02

Note—Tomball, effective September 29, by Humble Oil & Refining Co. and October 2 by Magnolia Petroleum Co., and November 10 by Stanolind Crude Oil Purchasing Co

*Greta posted by Texas Co. †Shell Petroleum Corp. ‡Refugio heavy by Humble Oil & Refining Co. Cleveland (Liberty County) posted by Magnolia Petroleum Co. §Bosco posted by Pure Oil Co.

South Central and Southwest Texas

(See note below table)

Darst Creek ..... $.87
Mirando ..... .80
Luling (Sept. 29, 1933) ..... .75
Pettus 1.05
Salt Flat ..... .87
Lytton Springs (Sept. 29, 1933) ..... .95
Duval County (Sept. 29, 1933) ..... .80
Saxet ..... .95

Note—Effective on September 29 by Humble Oil & Refining Co. in Darst Creek, Mirando, Pettus, Salt Flat and Saxet. Effective September 29 in Darst Creek by Gulf Pipe Line Co. and Texas Co. Effective October 2 by Magnolia Petroleum Co. Effective in Pettus and Salt Flat on September 29 by Humble Oil & Refining Co. and Gulf Pipe Line Co. Luling and Lytton Springs by Magnolia Petroleum Co. Duval County by Texas Co. Saxet, effective September 29, by

(Continued on Page 59)

TANK WAGON MARKETS

Quotations for gasoline and kerosene in United States, as furnished by the larger marketing concerns, include taxes

December 26, 1934

Taxes

The gasoline quotations given in the following tables include the 1-cent Federal tax, as well as state, county and city taxes. The gasoline quoted is the regular or standard grade. In most marketing areas a third grade and a premium grade are also available.

Discounts

Under the standard form of commercial consumer contract which went into effect March 1, 1934, save in California, Oregon, Washington, Arizona and Nevada, a discount of 1 cent a gallon off tank wagon or 3 cents a gallon off retail prices is permitted for purchases running between 4,000 and 10,000 gallons a month, or 4 cents a gallon off retail prices for purchase in lots of more than 10,000 gallons a month. The minimum delivery is 25 gallons.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline: Tank wagon	Gasoline: Service station	Incl'ds tax of	Kero- tank wagon
Denver, Colo.	18.0	20.0	5.0	12.5
Pueblo	18.0	20.0	5.0	11.0
Grand Junction	16.0	18.0	5.0	15.0
Casper, Wyo.	18.0	20.0	5.0	11.5
Cheyenne	18.0	20.0	5.0	13.0
Butte, Mont.	21.0	23.0	5.0	17.5
Billings	22 0	24 0	6 0	16.5
Helena	23.0	25.0	6.0	17.5
Great Falls	21 5	23.5	6.0	17.5
Salt Lake, Utah	21.0	23.0	5.0	16.0
Boise, Idaho	22.5	24.5	6.0	18.0
Twin Falls	22.5	24.5	6.0	18.0
Albu'que, N. M.	18.0	20.0	*7.0	13.0

*One-cent city tax

Effective March 1, 1934, discount to dealers with or without contract throughout Continental territory: Undivided dealer discount off service station price, 4 cents; divided dealer accounts, 2½ cents.

Standard Oil Co. (Indiana)

	Gasoline: Tank wagon	Gasoline: Service station	Incl'ds tax of	Kero- tank wagon
Chicago	14.8	14.8	4.0	8.0
Decatur, Ill.	14.4	9.9	4.0	10.2
E. St. Louis	14.1	11.0	4.0	9.5
Joliet	14.5	16.5	4.0	10.2
Peoria	14.7	9.5	4.0	10.2
Quincy	12.9	14.9	4.0	10.0
Davenport, Ia.	14.2	14.0	4.0	10.1
Des Moines	14.1	16.1	4.0	10.1
Mason City	14.4	16.4	4.0	10.1
Sioux City	14.3	16.3	4.0	9.7
Duluth, Minn.	15.0	17.0	4.0	10.4
Mankato	14.7	16.7	4.0	9.5
Minneapolis	15.7	13.4	4.0	10.4
LaCrosse, Wis.	15.7	17.7	4.0	10.8
Green Bay	15.9	17.9	5.0	10.2
Milwaukee	15.8	17.8	5.0	9.0
Madison	16.0	18.0	5.0	9 9
Detroit, Mich.	15.0	17.0	4.0	10.5
Grand Rapids	14.7	16.7	4.0	10.2
Saginaw	15.0	17.0	4.0	* 10.5
Evansville, Ind.	14.3	14.9	5.0	10.0
Indianapolis	16.1	18.1	5.0	10.2
South Bend	16.4	18.4	5 0	9.0
Fargo, N. Dak.	15.7	17.7	4.0	11.4
Huron, S. Dak.	16.2	18.2	5.0	11.4
Sioux Falls	15.6	17.6	5.0	10.9
Kans. C., Mo.*	13.6	15.6	4.0	7.5
Springfield	13.2	15.2	4.0	8.8
St. Louis	12.7	12.5	3.5	8.7
St. Joseph*	13.6	15.6	4.0	7.8
Wichita, Kans.	13.2	15 2	4.0	7.5
Bartlesville, Ok.	15.7	18.2	5.0	8.5

*State tax 3 cents, 1-cent city tax and 1-cent federal tax.

Discounts to dealers, effective March 1, 1934: Undivided accounts, 4 cents a gallon on Red Crown Ethyl and Standard Red Crown, divided accounts, 3½ cents a gallon on Red Crown Ethyl and Standard Red Crown.

Naphtha

	Tank wagon*
Oleum spirits	16.9
V.M.&P. naphtha	18.0
Cleaners' naphtha	18.0
Stanisol	18.0

*Prices include 3-cent Illinois tax, but not 1-cent federal tax.

Prices f.o.b. Chicago, September 13, 1933. Each of above prices subject to discount of 1 cent per gallon for 150-gallon lots if covered by contracts.

Stanolex Furnace Oil in Chicago

Effective Nov. 4, 1934, f.o.b. Chicago tank wagon prices: No. 1 (36-40 lt. stw. zero), less than 100 gallons, 8¼ cents; 100-149 gallons, 7¼ cents; 150 gallons or more, 6¼ cents; No. 2 (30-34, stw. zero), less than 150 gallons, 7¼ cents; No. 3 (32-26, zero), less than 150 gallons, 7 cents; No. 4 (12-16 zero), less than 400 gallons, 7 cents; viscosity of No. 4, 85 at 100° F.; No. 5, less than 400 gallons, 5¾ cents. For deliveries of more than stated quantities of Nos. 2, 3, 4 and 5, deduct 1 cent.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline: Tank wagon	Gasoline: Service station	Incl'ds tax of	Kero- tank wagon
Atlanta, Ga.	15.0	16.0	7.0	14.5
Augusta	16.0	17.0	7.0	14.5
Macon	19.0	21.0	7.0	14.5
Savannah	17.5	19.5	7.0	14.0
Birm'ham, Ala.	19.0	21.0	8.0	14.0
Mobile	16.5	17.5	8.0	12.0
Montgomery	17.0	18.0	8.0	15.0
Jackson, Miss.	17.5	19.5	8.0	13.0
Vicksburg	17.5	19.5	7.0	12.0
Jack'ville, Fla.	18.0	20.0	8.0	11.5
Miami	18.0	20.0	8.0	13.5
Pensacola	16.0	17.0	8.0	13.5
Tampa	18.0	20.0	8.0	12.5
Lexington, Ky.	16.0	17.5	6.0	11.5
Covington	14.5	15.5	6.0	11.5
Louisville	15.5	16.5	6.0	11.0
Paducah	14.5	15.5	6.0	11.0

In addition to the state tax of 4 cents on gasoline, Montgomery has city and county tax of 2 cents on gasoline and one-half cent on kerosene. Kerosene prices in Georgia and Mississippi include 1 cent sta.e tax; in Alabama, an inspection fee of one-half cent on kerosene and one-fortieth cent on gasoline; in Florida an inspection fee of one-eighth cent on kerosene and gasoline. To Pensacola, Mobile and Birmingham state taxes on gasoline add 1 cent city tax.

Southwestern District

MAGNOLIA PETROLEUM CO.

	Gasoline: Tank wagon	Gasoline: Service station	Incl'ds tax of	Kero- tank wagon
Dallas, Tex.	13.0	15.0	5.0	8.5
Fort Worth	13.0	15.0	5.0	8.5
Houston	15.0	17.0	5.0	8.5
San Antonio	16.0	18.0	6.0	8.5
El Paso	18.0	20.0	5.0	11.0
Muskogee, Okla.	15.0	17.0	5.0	8.0
Okla. City	15.0	17.0	5.0	7.0
Tulsa	15.0	17.0	5.0	7.5
Ft. Smith, Ark.	14.1	16.5	5.0	8.0
Little Rock	16.6	19.0	7.5	9.0
Texarkana	14.0	16.0	5.0	8.5

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline: Tank wagon	Gasoline: Service station	Incl'ds tax of	Kero- tank wagon
Atl'tic City, N.J.	12 9	16.4	4 0	9.0
Newark	12.2	15.7	4 0	8 5
Annapolis, Md.	14.5	18.0	5.0	10.0
Baltimore	14.0	17.5	5.0	8.5
Cumberland	15.0	18.0	5.0	12.7
Wash'g'n, D. C.	12.0	15 5	3.0	11.5
Danville, Va.	16.5	20.0	6.0	12.9
Norfolk	15.0	18.5	6.0	11.3
Petersburg	15.5	19.0	6.0	11.4
Richmond	15.5	19.0	6.0	11.7
Roanoke	16.5	20.0	6.0	12.9
Charls'n, W.Va.	15.0	18.5	5.0	12.6
Parkersburg	14.5	18.0	5.0	11.2
Wheeling	15.0	18.5	5.0	12.2
Charlotte, N. C.	16.5	19.0	7.0	13.5
Hickory	16 0	18.5	7.0	13.7
Mt. Airy	17.0	20.0	7.0	13.8
Raleigh	15.5	18.0	7.0	13.2
Salisbury	14 5	17 0	7 0	13.6
Charleston, S.C.	15.2	18.7	7.0	11.2
Columbia	14.9	17.4	7.0	13.2
Spartanburg	15.5	18 0	7 0	13.5

Effective October 23, tank wagon gasoline refers to dealer instead of retail prices.

Price basis to dealers: Undivided dealers at regular price less one-half cent. Discount for kerosene, 1 cent off tank wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except in New Jersey, where no discount is given.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline: Tank wagon	Gasoline: Service station	Incl'ds tax of	Kero- tank wagon
Omaha	15.9	17.9	5.0	10.0
McCook	16.6	18.6	5.0	10.7
Norfolk	16.2	18.2	6.0	10.4
North Platte	16.7	17.2	5.0	10.8
Scottsbluff	17.4	19.4	5.0	11.5

Note: Discounts to dealers; where service station gasoline prices are (maximum overall, including rent) as follows: Reliance, 2½ cents; Standard Red Crown, 3½ cents; Red Crown Ethyl, 3½ cents.

Where service station gasoline prices are below normal, resellers' allowances are reduced one-half of the amount below normal, down to the following (minimum overall, including rent): Reliance, 2 cents; Standard Red Corwn, 3 cents; Red Crown Ethyl, 3 cents. Discounts to consumers covered only by form CD-1, official commercial consumer contract.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline: Tank wagon	Gasoline: Service station	Incl'ds tax of	Kero- tank wagon
N. Orleans, La.	15.5	19.0	†8.0	†10.0
Baton Rouge	14.2	17.7	6.0	†12.0
Alexandria	15.1	18.6	*7.0	†12.0
Lafayette	16.3	19.8	‡*8.0	†12.0
Lake Charles	15.2	18.7	*7.0	†12.0
Shreveport	13.0	16.5	6.0	†12.0
Knoxville, Tenn.	18.7	22.2	8.0	13.5
Memphis	17.0	20.5	8.0	10.5
Chattanooga	18.5	22.0	8.0	11.0
Nashville	18.0	21.5	8.0	12.0
Bristol	14.5	17.0	8.0	14.0

*Includes city tax of 1 cent. †Louisiana kerosene prices include 1-cent state tax. ‡Includes 2-cent parish tax.

Effective October 23, tank wagon gasoline refers to dealer instead of retail prices.

Price basis to dealers: Undivided dealers at dealer price less one-half cent.

Pacific Coast Territory

STANDARD OIL CO. OF LOUISIANA*

	Gasoline: Tank wagon†	Gasoline: Posted retail	Incl'ds tax of	Kero- tank wagon
San Francisco	16 5	18.5	4.0	12.5
Los Angeles	15.5	17.5	4.0	12.5
Fresno, Calif.	17.0	19.0	4.0	14.0
Phoenix, Ariz.	17.0	19.0	6.0	‡16.0
Reno, Nev.	19.0	21.0	5.0	15.5
Portland, Ore.	19.0	21.0	6.0	13.5
Seattle, Wash.	19.0	21.0	6.0	13.5
Tacoma	19.0	21.0	6.0	13.5
Spokane	22.0	24.0	6.0	18.0

*Retail prices posted by Standard Stations, Inc., a subsidiary.

†Prices are at company's plant or depots, as company does not operate stations. A 4-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 1 cent.

‡Includes 5-cent state tax.

Pennsylvania, Delaware and Part of New England

ATLANTIC REFINING CO

	Gasoline: Tank wagon	Gasoline: Service station	Incl'ds tax of	Kero- tank wagon
Phil'delphia, Pa.	14.0	16.0	4.0	9.0
Pittsburgh	15.0	17.0	4.0	10.0
Allentown	14.5	16.5	4.0	10.0
Erie	15.0	17.0	4.0	9.0
Scranton	15.0	17.0	4.0	10.0
Altoona	15.0	17.0	4.0	10.0
Dover, Del.	14.5	16.5	4.0	10.0
Wilmington	14.5	16.5	4.0	9.0
Springf'd, Mass	13.0	16 0	4 0	7.5
Worcester	13.0	16.5	4.0	8.5
Hartford, Conn.	12.0	15.5	3.0	7.5
New Haven	12.0	15.5	3.0	7.0
Providence, R.I.	11.5	15.0	3.0	8.0

Note—Tank wagon prices are those applicable to consumers purchasing lots of 100 or more gallons in one delivery.

Canada*

Imperial 3-Star Gasoline

IMPERIAL OIL, LTD.

	Gasoline: Tank wagon	Gasoline: Service station	Incl'ds tax of	Kero- tank wagon
Hamilton, Ont.	†21.0	23.5	6.0	17.5
Toronto, Ont.	†21.0	23.5	6.0	17.5
Brandon, Man.	30.2	33.3	7.0	21.8
Winnipeg, Man.	28.7	31.7	7.0	20.2
Regina, Sask.	29.0	32.0	6.0	21.5
Saskatoon, Sask.	31.8	34.8	6.0	24.3
Edmonton, Alta.	31.2	34.2	6.0	23.7
Calgary, Alta.	28.5	31.5	6.0	21.0
Vancouver, B.C.	27.0	30.0	7.0	24.0
Montreal, Que.	24.0	27.0	6.0	17.0
St. John, N.B.	26.0	30.0	8.0	19.5
Halifax, N. S.	26.0	30.0	8.0	19.5

*Imperial gallon used in Canada. †Governed by service station price.

Maritime provinces, all dealers 4 cents off service station price. All other provinces open dealers 3 cents per gallon off service station price (except Toronto and Hamilton cities which are—open dealers 2½ cents off service station price) 1 cent additional to 100 per cent accounts.

New York and New England

SOCONY-VACUUM CO., INC.

	Gasoline: Posted dealer	Gasoline: Service station	Incl'ds tax of	Kero- tank wagon
Albany, N. Y.	13.0	16.5	4.0	8.5
Met. New York	12.5	16.0	4.0	8.5
Br'klyn, Queens	12.5	16.0	4.0	8.5
Buffalo	9.5	11.5	4.0	8.0
Rochester	11.5	13.5	4.0	8.5
Syracuse	12.5	17.0	4.0	8.75
Boston, Mass.	12.5	16.0	4.0	8.0
Portland, Me.	13.5	18.0	5.0	8.75
Manch't'r, N.H.	13.0	14.0	5.0	9.0
Burlington, Vt.	16.0	19.5	5.0	9.0

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline: Tank wagon	Gasoline: Service station	Incl'ds tax of	Kero- tank wagon
Ohio points	15.5	17.5	5.0	*12.5

*Includes state tax of 1 cent, effective July 22.

Retail Price Changes

Regular-Grade Gasoline and Kerosene

Socony-Vacuum Oil Co., Inc., December 21, advanced tank wagon gasoline .25 cent and station gasoline one-half cent in Metropolitan New York. December 21, advanced tank wagon gasoline 1.25 cents and station gasoline 2.5 cents in Brooklyn and Queens.

Standard Oil Co. of Nebraska, December 19, reduced station gasoline one-half cent in North Platte.

Continental Oil Co., December 13, reduced tank wagon and station gasoline one-half cent in Billings. December 15, reduced tank wagon and station gasoline 1.5 cents in Great Falls. December 18, reduced tank wagon and station gasoline one-half cent in Grand Junction.

Standard Oil Co. of New Jersey, December 12, advanced tank wagon gasoline 4.3 cents and station gasoline 5.3 cents in Newark. December 12, advanced tank wagon gasoline 2.4 cents and station gasoline 3.4 cents in Atlantic City. December 17, advanced tank wagon and station gasoline 2 cents in Salisbury. December 15, advanced tank wagon and station gasoline 1 cent in Spartanburg.

The Atlantic Refining Co., December 21, reduced station gasoline one-half cent in Springfield.

The Standard Oil Co. of New Jersey and the Standard Oil Co. of Louisiana this week announced a new policy in regard to gasoline sales to commercial consumers. Retroactive to December 4, 1934, all new commercial consumer accounts of the companies will be billed on the basis of Essolene (regular grade) posted tank car price plus 2.5 cents per gallon for tank wagon deliveries in lots of 50 to 100 gallons at one time (depending upon the code region in which each city is located).

Contract customers only will be allowed the following discounts at the end of each month depending upon the actual gallonage purchased:

	Cents
3,001 to 10,000 gallons per month	0.5
10,001 to 20,000 gallons per month	1.0
20,001 to 40,000 gallons per month	1.5
40,000 gallons and up per month	2.0

CRUDE OIL PRICE CHANGES

The Ohio Oil Co. on December 10 reduced the price of Lance Creek, Wyo., crude to 75 cents per barrel to adjust transportation differentials.

ASSOCIATED BUYS INTEREST

SAN FRANCISCO, Calif., Dec. 22.—Associated Oil Co. announces it has purchased all the interests of the Southern Pacific Co. and Standard Oil Co. in the Associated Pipe Line Co.

L. D. Jurs, vice president in charge of transportation, said the 280-mile line down the San Joaquin Valley from the oil fields to Port Costa, will be used to supplement the line between Belridge and Monterey, giving the company greater flexibility for movement of crude oil.

Closing Year Is Unsatisfactory in Chicago Markets, But Sentiment Improving

By SPECIAL CORRESPONDENT

CHICAGO, Dec. 24.—Despite the general feeling in oil marketing circles that the year just drawing to a close has been a distinctly unsatisfactory one, sentiment appears somewhat better at this time than it was a month ago, in view of the evident success which is attending, up to this time at least, the recent push to get tank wagon and service station prices higher and hold them there. The latest reports from the field indicate that in most cases the advanced gasoline, kerosene and tractor-furnace oils are holding at the planned price levels. In a few cases the advances have been canceled by later cuts. Considering that this is a period of reduced consumption, this is cause for encouragement. There is regret similar action was not achieved earlier, when consumption was at a better level.

Widespread snowfall and moderately cold weather have cut down motor travel and trade gallonage of gasoline, but after the first of the year it is hoped to get tank car market improvement started. It generally is recognized that betterment in tank wagon and service station prices cannot be permanent without corresponding developments in the refinery market.

Expect More Buying

Understanding here as the week opened was that a little more buying by major companies in the tank car market was imminent and should result in some firming in tank car gasoline. It is known that the quantity of distress gasoline overhanging the market at this time is not unusually large. However, in relation to the current rate of jobber buying the quantity that does exist is large, since jobbers have withdrawn from the market to a large extent. They probably will not do much buying until after year-end, when they can get their year-end inventory and financial problems out of the way. They report they are still receiving enough material on contract to take care of their immediate needs. Accordingly, 3½-cent third grade gasoline is not tempting them much.

The quieting down of some of the disturbances in tank wagon and service station markets seems to be due partly to a disposition of the contending elements to minimize their differences and overlook some of the points which were creating trouble earlier. Whether such matters as retail gasoline price differentials can be adjusted permanently remains to be seen. This one question probably is still the most vexatious of all. The general belief is that it will have to be handled in some definite way before there can be a sound basis for stable marketing operations.

Interest in better grades of motor fuel has tended to increase lately, especially in the northern regions. Volatility in gasoline is more and more demanded, and this is reflected in plans and products of representative marketing companies. At the same time it is understood that station sales of premium priced products have not tended to pick up from the relatively low percentage which they reached recently.

Kerosene

Movement of kerosene is slow as might be expected at this season, but the product is being kept at a relatively firm market position, and the tone is strong. The 42-44 is scarce.

Heating Oils

Distillates and other heating oils are now reflecting the effect of a continuing good demand and a none too large supply. Prices are holding firmly at the best levels of the season and are about at the top that was reached last season, also. The open market buyers are finding comparatively little material available and the holders of contrcts, who include most of the substantial distributors, are send-

(Continued on Page 202)

Crude Oil Prices

(Continued from Page 57)

Humble Oil & Refining Co. and Texas Co. Effective September 20 in Salt Flat by Shell Petroleum Corp.

Rocky Mountain States

Ilea, light (Sept. 29, 1933)	$.95
Ilea, heavy (Sept. 29, 1933)	.90
Florence, Colo. (June 17, 1933)	.80
Fort Collins and Wellington, Colo. (June 17) (See Salt Creek prices)	
Big Muddy (Sept. 29, 1933)	1.01
Frannie, light (May 1, 1934)	.70
Frannie, heavy (Sept. 29, 1933)	.62
Salt Creek and LaBarge (Sept. 29, 1933) See Stanolind Mid-Continent price schedule	
Grass Creek, light (Sept. 29, 1933)	1.18
Grass Creek, heavy (Sept. 29, 1933)	.62
Elk Basin (Sept. 29, 1933)	1.18
Rock Creek (Sept. 29, 1933)	1.02
Lance Creek (Dec. 16, 1932)	.92
Hudson (June 2, 1931)	.65
Lost Soldier (Sept. 30, 1933)	.88
Hamilton Dome:	
Below 18° (July 1, 1934)	.52
18° and above (July 1, 1934)	.62
Torchlight (Sept. 29, 1933)	1.18
Greybull (Sept. 29, 1933)	1.18
Pondera (Sept. 29, 1933)	1.25
Sunburst (Sept. 29, 1933)	1.35
Cat Creek, Montana	1.07
Hogback (Sept. 29, 1933)	1.11
Lea County, N. Mex. (Sept. 29, 1933)	.75
Maljamar (Sept. 29, 1933)	.70
Artesia-Jackson (Dec. 1, 1933)*	.75

Note—Salt Creek, Torchlight, Elk Basin, Grass Creek, Frannie, Greybull, Hogback and Ilea by Stanolind Oil & Gas Co. Elk Basin, Grass Creek light, Big Muddy, Rock Creek and Sunburst by Ohio Oil Co. Lost Soldier posted by Producers & Refiners Corp. Artesia, Jackson and Maljamar posted by Continental Oil Co. Lea County, effective September 29, 1933, by Humble Oil & Refining Co. and other buyers; Fort Collins, Wellington, Orchard, Florence, Big Muddy, Cat Creek, Rattlesnake and Table Mesa by Continental Oil Co. Osage posted by Arro. Hamilton Dome, Wyo., by Stanolind Oil & Gas Co.

*Continental Oil Co.

North Louisiana and Arkansas

Smackover, Ark. (all grades)	$.70
Tullos, Urania, La. (Jan. 13, 1934)	.87
Nevada, Ark. (Sept. 29, 1933)	.60
East El Dorado (Sept. 29, 1933)	.70
Converse, La. (Mar. 17, 1934)	1.03
Elm Grove, La. (Sept. 29, 1933)	.75
Holly, La. (Nov. 17, 1934)	1.03
Pleasant Hill, La. (Mar. 17, 1934)	1.03
Zwolle, La. (Mar. 17, 1934)	1.03
Champagnolle, Ark. (Mar. 17, 1934)	.81
Lisbon, Ark. (Mar. 17, 1934)	1.03
Stephens, Ark. (Sept. 29, 1933)	.70
Urbana, Ark. (Mar. 17, 1934)	.60
Other fields (See gravity table)	

Note—Smackover: Effective September 29, 1933, Texas Co., Magnolia Petroleum Co., Standard of Louisiana, Louisiana Oil Refining Corp., Gulf Refining Co. and Phillips Petroleum Co. East El Dorado posted by Magnolia Petroleum Co. and Gulf Refining Co., Nevada by Standard Oil Co. of Louisiana. Urbana posted by H. L. Hunt, Inc., and Louisiana Oil Refining Co. Converse, Holly, Zwolle and Urbana by Standard Oil Co. of Louisiana; Elm Grove by Simmons Oil & Refining Co.; Pleasant Hill by Standard Oil Co. and Magnolia Petroleum Co. Champagnolle by Standard Oil Co. and Lion Oil & Refining Co.

Eastern States

TIDE WATER PIPE CO.
(Effective Dec. 6, 1934)

Bradford, Pa.	$2.05
Allegany, N. Y.	2.05

SOUTH PENN OIL CO.
(Effective Dec. 6, 1934)

Pennsylvania Grade Oil in National Transit Lines (Bradford Field)	$2.05
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	1.72
Pennsylvania Grade Oil in Eureka Pipe Line lines	1.67
Pennsylvania Grade Oil in Buckeye Pipe Line lines	1.57
Corning Grade Oil in Buckeye Pipe Line Co.'s lines (Oct. 2, 1933)	1.37

PENNZOIL CO.
(Effective Dec. 6, 1934)

Pennsylvania Grade Oil in National Transit Lines:	
Group A (Includes Cochran, Franklin, Hamilton and Doolittle districts.	$1.97
Group B (Includes Titusville district.	1.96
Group C (Includes Turkey and Tidioute districts.	1.95
Group D (Includes Bear Creek and Porkey districts.	1.94
Group E (Includes Eldeneau, Bull Creek, Rough Run, Carbon, Dipner, Bredin, McJunkin, Jameson, Kennerdell, Emlenton, Tiona, Lacey and Kinsua districts. Price depends on length of pipe line haul to plant at Oil City.	1.91

PURE OIL CO.
(Effective Dec. 6, 1934)

Cabin Creek, W. Va.	$1.67
Bradford Hollow, W. Va.	1.67
Kelly Creek, W. Va.	1.62

CREW-LEVICK CO.
(Effective Dec. 6, 1934)

Oil City-Titusville	1.97

Middle Western States

OHIO OIL CO.
(Effective September 29, 1933)

Lima	$1.30
Illinois (Jan. 5, 1934)	1.13
Princeton, Ind. (Jan. 5, 1934)	1.13
Plymouth	Shut in
Western Kentucky (May 26, 1934)	1.08
Midland, Mich. (Sept. 30, 1933)*	1.02
West Branch, Mich.	.86
Oceana, Mich. (Oct. 5, 1933)	.90
Somerset, Ky. (Sept. 30, 1933)	1.33

*Posted by Pure Oil Co. and Simrall Pipe Line Co. Producers Pipe Line Co. pays 5 cents per barrel over Pure Oil Co.'s posted prices. West Branch, Mich., posted by Simrall Pipe Line Co. Somerset, Ky., crude purchased by Ashland Refining Co., Ashland, Ky., and posted price includes premium. Oceana posted by Old Dutch Refining Co. and Naph-Sol Refining Co.

Canada

Ontario (September 9, 1933):	
Petrolia*	$2.10
Oil Springs	2.17
Turner Valley (May 21, 1934):†	
Clear naphtha	$2.55
Discolored naphtha	2.37
Crude oil, 50 gravity	2.19
Crude oil, 45 to 49.9	2.07
Crude oil, 40 to 44.9	1.50

*Imperial Oil, Ltd. †Imperial Oil, Ltd. and Regal Oil & Refining Co.

Mexico

Panuco*	$1.60

*F.o.b. ship, based on November transactions and exclusive of production and export taxes and bar dues.

California Crude Oil Prices

STANDARD OIL CO. OF CALIFORNIA
(Effective September 6, 1933)

For current purchases of crude oil at the well (unless otherwise specified). (All gravities above those quoted take highest price offered in that field.)

Gravity—	Long Beach	Seal Beach, Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda, Brea Canyon	Athens-Rosecrans	Torrance	Richfield	Whittier, La Habra	Montebello	Santa Fe Springs	La Habra-Coyote	Midway-Sunset, Elk Hills, Buena Vista Hills	Lost Hills	Coalinga	Coyote
14-14.9	$.65	$.65	$.65	$.65	$.65	$.65	....	$.65	$.65	$.65	$.65	....	$.65	$.57	$.57	$.57	$.65
15-15.9	.65	.65	.69	.69	.66	.69	....	.66	.65	.65	.65	....	.65	....	....	..	.65
16-16.9	.66	.55	.72	.73	.69	.73	....	.69	.67	.68	.65	....	.65	....	....	..	.65
17-17.9	.69	.65	.75	.76	.73	.76	....	.72	.70	.71	.65	....	.68	....	....	....	.68
18-18.9	.72	.65	.78	.80	.76	.79	....	.75	.74	.74	.65	....	.71	.61	.61	.59	.71
19-19.9	.75	.65	.81	.83	.80	.82	....	.78	.78	.78	.65	....	.74	.64	.65	.62	.74
20-20.9	.78	.68	.83	.87	.83	.85	....	.81	.82	.81	.66	....	.78	.67	.69	.65	.78
21-21.9	.81	.72	.86	.90	.87	.88	....	.83	.85	.84	.69	$.72	.81	.70	.73	.68	.81
22-22.9	.84	.76	.89	.94	.90	.92	....	.85	.89	.87	.72	.76	.84	.73	.76	.72	.84
23-23.9	.88	.81	.92	.97	.94	.95	$ .83	.89	.92	.90	.76	.79	.87	.77	.79	.75	.87
24-24.9	.91	.85	.95	1.01	.97	.98	.86	.92	.97	.93	.80	.83	.90	.81	.82	.78	.90
25-25.9	.94	.89	.98	....	1.00	1.01	.90	.95	1.00	...	.85	.87	.93	.85	.85	.81	.93
26-26.9	.97	.93	1.01	....	1.04	1.04	.94	.98	1.04	....	.89	.90	.96	.89	.88	....	.96
27-27.9	1.00	.98	1.04	....	....	1.07	.97	....	1.08	....	....	.94	.99	.93	.91	....	.99
28-28.9	1.03	1.02	1.07	....	....	1.10	1.01	....	1.11	....	....	.98	1.02	.97	.94	..	1.02
29-29.9	1.06	1.05	1.09	....	....	....	1.04	....	1.15	....	....	1.01	1.05	1.01	.97	....	1.05
30-30.9	1.09	1.10	1.12	....	....	....	1.08	....	....	....	....	1.05	1.09	1.05	1.00	....	1.08
31-31.9	....	....	....	....	....	....	1.12	....	....	....	....	1.08	1.12	1.09	....	....	1.12
32-32.9	....	....	....	....	....	....	1.15	....	....	....	....	1.12	1.15	1.13	....	....	1.15
33-33.9	....	....	....	....	....	....	....	....	....	....	....	1.16	1.18	1.17	....	....	1.18
34-34.9	....	....	....	....	....	....	....	....	....	....	....	1.19	1.21	....	....	....	1.21
35-35.9	....	....	....	....	....	....	....	....	....	....	....	1.23	....	....	....	....	....
36-36.9	....	....	....	....	....	....	....	....	....	....	....	1.26	....	....	....	....	....
37-37.9	....	....	....	....	....	....	....	....	....	....	....	1.30	....	....	....	....	....
38-38.9	....	....	....	....	....	....	....	....	....	....	....	1.34	....	....	....	....	....

Additional Standard Oil Quotations

Mountain View—Effective July 3, 1934, the following are the pri of the Standard Oil Co. of California for its current purchases of crude oil at the well in the Mountain View Field: 14 to 19.9 degrees, 57 cents; 20-20.9, 58 cents; 21-21.9, 59 cents; 22-22.9, 61 cents; 23-23.9, 63 cents; 24-24.9, 66 cents; 25-25.9, 69 cents; 26-26.9, 72 cents; 27-27.9, 75 cents; 28-28.9, 78 cents; 29-29.9, 81 cents; 30-30.9, 84 cents; 31-31.9, 87 cents; 32-32.9, 90 cents; 33 degrees and above, 93 cents.

Elwood Terrace—F.o.b. ship, 33 degrees, $1.03; 34 degrees, $1.06; 35-35.9, $1.09; 36-36.9, $1.12; 37 degrees and over, $1.15.

Newhall—14 degrees and over, 57 cents.

McKittrick and Kern River—14 degrees and over, 57 cents.

Wheeler Ridge—14 to 17.9 degrees, 57 cents; 18-18.9, 58 cents; 19-19.9, 61 cents; 20-20.9, 64 cents; 21-21.9, 67 cents; 22-22.9, 70 cents; 23-23.9, 73 cents; 24-24.9, 76 cents; 25 degrees and over, 79 cents.

Kettleman Hills—33-33.9 degrees, 93 cents; 34-34.9, 96 cents; 35-35.9, 99 cents; 36-36.9, $1.02; 37-37.9 $1.05; 38-38.9, $1.08; 39 degrees and over, $1.11.

The Texas Co. posted in Shiells Canyon, South Mountain and Santa Paula as follows: 14 to 17.9, 57 cents; 3 cents added for each degree up to and including 26-26.9 degrees at 84 cents; then 4 cen added for each degree up to and including 30 degrees and over at $1. Company posts Standard Oil Co.'s Montebello prices in Montebello and North Whittier, and posts Standard Oil Co. prices in Signal Hill, Alamitos Heights, Huntington Beach, Torrance, Richfield and Santa Fe Springs, all effective September 6.

General Petroleum Co. posts Standard Oil Co. prices in Athens, Rosecrans and Signal Hill; Alamitos Heights up to 26-26.9; Santa Fe Springs up to 35-35.9; Richfield up to 25-25.9; Brea Canyon an Olinda up to 25-25.9, and Torrance up to 25-25.9.

Union Oil Co., effective September 6, posts same price as Standard Oil Co. in all fields in which both purchase, excepting that in Athens-Rosecrans, Union Oil Co. posts 21-21.9, 72 cents, and 33-33.9, $1.18; 34-34.9, $1.21, and 35-35.9, $1.24.

Associated Oil Co., effective September 6, posted same prices for the same grades as Standard Oil Co. of California, excepting that in some fields its gravity scale stops as follows: Huntington Beach, 26 degrees and over; Seal Beach and Alamitos Heights, 36 degrees and over; Coyote Hills, 23 degrees and over; Richfield, 25 degrees and over; Torrance, 25 degrees and over; Inglewood, 24 degrees and over; Santa Fe Springs, 35 degrees and over; Midway-Sunset, Elk Hills, Buena Vista Hills, 30 degrees and over. Also Associated pays 57 cents for oil of 11 to 13.9 gravity in McKittrick, Kern Front, Kern River, Midway-Sunset, Elk Hills, Buena Vista Hills and Coalinga.

NATURAL GASOLINE MANUFACTURE

Gauging Pressure Tanks Described in Bulletin

To provide natural gasoline manufacturers and consumers with comprehensive information on the storing and gauging of natural gasoline, the California Natural Gasoline Association announces the publication of Bulletin TS-341, "Tentative Standard Method for Gauging Natural Gasoline and Pressure Storage." Scheduled for adoption soon as a standard procedure by the A.P.I., the 41-page bulletin represents the results of a co-operative study by nine major natural gasoline producers on the Pacific Coast. The work was co-ordinated through a committee headed by R. R. Crippen of the Texas Co. (California).

Compiled to be of direct use to plant operators and gaugers, as well as engineers, the bulletin provides the details essential to preparing a tank for transfer, the accurate determination of high and low gauges, and the placing of the tank on the line. Complete procedures are included for taking samples and making the necessary tests incidental to accurate measurement. An abridged table of volume correction factors for temperature is given.

Sampling methods include procedure for obtaining representative samples at tank pressure in standardized pressure sample containers. Sampling at atmospheric pressure is also covered.

Although the scope of the bulletin does not include the engineering aspects of tank design and construction, specifications for accessories used in measurement are presented to encourage standardized safe practices. Among the many specifications are included maximum gauge glass length, automatic closing gauge fittings, valves and minimum size of pipe connections. Strapping data are given.

Copies can be obtained through the C.N.G.A. Secretary, 1217 Associated Realty Building, Los Angeles, Calif., 25 cents postpaid.

Meeting to Feature New Technical Developments

Summarizing the latest developments in engine design and operation, A. K. Hegeman, sales engineer for Smith-Booth-Usher Co., will present a paper on "Modern Developments in Oil Field Gas Engine Design" at the January meeting of the California National Gasoline Association. Mr. Hegeman's discussion will reveal what manufacturers have been doing to improve design and lower costs so as to meet the competition offered by cheap electric and steam power. The technical phase of his presentation will deal with the progress in adapting high speed engines to oil field conditions; the objectionable features of excessive piston speeds; and the latest developments in mechanical and thermal efficiencies.

On the same program, C. G. Woodmansee of the American Talking Wire Co. will explain and demonstrate an invention for the recording of sound magnetically on a moving steel wire. Mr. Woodmansee's adaptation of the wire-record principle has resulted in the first complete commercial unit for its application. Sounds of any type are picked up with a microphone; sent through three stages of radio amplification; and then magnetically recorded on steel wire. His demonstration will include recordings of the voices of those present at the meeting, and a discussion of the applications of the apparatus to problems in communication.

Effect of Variable Operating Conditions on Absorption of Natural Gasoline

By GEORGE WEBER

In the absorption process of natural gasoline manufacture, there are several variable factors affecting the operating conditions of the process. When changes in these factors are being considered it is convenient to refer to charts which show the theoretical effect which the various operating conditions exert on the ratio of absorption oil to lean gas. With the use of several physical laws concerning the process, this oil-gas ratio may be computed for any number of conditions. As an example, consider an absorber operating at the following basic conditions:

Pressure, 47 lbs./sq. in.
Temperature, 90° F.
Theoretical plates, 12.
n-Pentane absorbed, 95 per cent.
Molecular wei ht of oil, 170.
Specific gravity of oil, .8.
By means of charts* on equilibrium

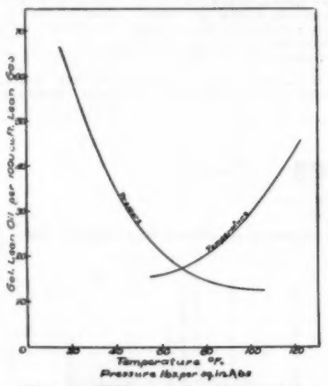


Fig. 1—Effect of temperature and pressure on oil-gas ratio in an absorber

vaporization constants, absorption factors and vapor pressures, the necessary functions of the ratio L/V can be obtained. For the basic conditions the ratio was computed to be .358 mols of oil per mol of lean gas. This value converted to practical units represents 24.4 gallons of oil for every 1,000 cubic feet of lean gas at atmospheric pressure and 60° F.

Pressure Factor

The pressure on the absorber is a function of the oil-gas ratio through two physical laws. It determines the amount of pentane condensed regardless of the presence of oil. It also is a function of the factor "K," the ratio of vapor to liquid in absorption. As shown in Figure 1, the required oil circulation rises rapidly at lowered pressures but tends to level out at 100 pounds. Pressures below 50 pounds under the assumed conditions require a high oil flow decreasing the capacity of the unit. The operating optimum would be influenced by the costs of added pressure and the saving in handling less oil.

*The charts used in computing data in the given example include those of Vaporization Equilibrium Constants, Absorption and Stripping Factors, Correction Factors for "K" values, Molecular Weights and Vapor Pressures. They are the result of work by George G. Brown and Mott Souders of Ann Arbor, Mich.

The effect of temperature on absorber operation is maintained by but one function, the equilibrium vaporization constant "K." Thus the gallons of oil per 1,000 feet of gas is computed in direct ratio with the "K" values. This condition gives a curve like that in Figure 1 showing the oil-gas ratio in inverse relation to temperature.

In comparison to the temperature and pressure, the number of theoretical absorber plates in a tower has small effect on the oil required to process a given amount of gas. This factor has its influence in the added increment of absorption efficiency brought about by further oil and gas contact on an additional plate. While the number of plates below eight affect the process considerably, the curve as shown in Figure 2 becomes asymptotic to the horizontal line representing the oil-gas ratio necessary for absorption in an absorber of infinite height.

If the conditions under which an absorber operates are fixed and it is desired to find what additional oil would

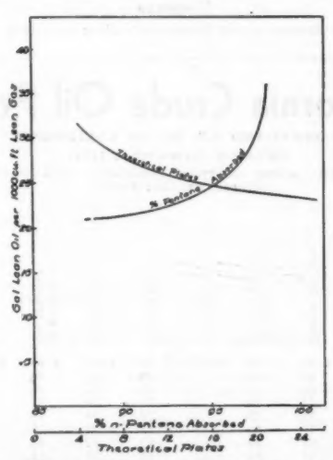

Gal. Lean Oil per 1000 cu.ft. Lean Gas
Theoretical Plates Absorbed
% Pentane Absorbed
% n. Pentane Absorbed
Theoretical Plates

Fig. 2—Effect of n-pentane absorbed and number of theoretical plates on absorption of natural gasoline

be needed to increase the yield of product, a curve showing the relation between n-pentane absorbed and oil-gas ratio would be convenient. In this case, the variable would be the fraction $\frac{y\,(n+1) - y_1}{y\,(n+1) - y_0}$ which in turn is a function of the absorption factor. To absorb 100 per cent of the pentane would require a ratio of oil to gas of 00. As in Figure 2, the curve levels out rapidly to reveal small ratio variations for pentane absorption below 90° F.

This system of showing the effect of varying single factors in absorption is applicable to specified cases and is accurate only to the extent that theory approaches practice. The knowledge of these mathematical relations is valuable, however, in providing the operator with a tool with which he may make estimates to be verified and perfected by actual practice.

This is the fifth and concluding article of a series concerning the stoichiometry of natural gasoline manufacture.

Announce Dates for Next Annual Gasoline Meeting

The Natural Gasoline Association of America has announced the dates of the 1935 annual convention as May 1, 2, and 3. The meetings will be held in the Tulsa Hotel in Tulsa and will include the usual group meetings for technical men and marketing men, the subjects of the papers to be delivered to be announced later.

Ray Miller, vice president of Hanlon-Buchanan, Inc., is chairman of the program committee for the convention and members of the committee include J. W. Vaiden, of Skelly Oil Co.; S. S. Smith, of Shell Petroleum Corp.; H. L. Eggleston, president of the California Natural Gasoline Association; J. B. Atkins, of the Parade Gasoline Co.; and R. N. Parks, of the Virginian Gas & Gasoline Co. The entertainment committee will be named by the board of directors of the Natural Gasoline Supply Men's Association, which meeting has been called for December 28. In past years the Supply Men's association has provided lunches for the men attending the convention, a smoker one evening, and a dance on the other evening.

Paramount May Build Carbon Black Plant

The Texas Railroad Commission has granted a permit to the Paramount Natural Gasoline Corp. to use 80,000,000 cubic feet of gas daily for stripping gasoline in Matagorda and Brazoria Counties. The order required that the residue gas must be used for carbon black manufacture. Accordingly the Paramount company issued an application for operating a carbon black plant. The hearing on the application was set for December 19 and later postponed to an early date in January.

Announce New Directorate of California Association

Under a revision of the by-laws of the California Natural Gasoline Association changes were made in the directorate of the association and the following names appear as directors in the respective classes.

Active Class "A," J. A. Campbell, Lomita Gasoline Corp.; F. E. Davie, Shell Oil Co.; H. L. Eggleston, Gilmore Oil Co. (ex officio); O. C. Field, O. C. Field Gasoline Corp.; R. D. Gibbs, Union Oil Co.; R. W. Heath, Signal Oil & Gas Co.; B. A. Koehler, Getty-Pacific Western Oil Co.; H. R. Linhoff, Richfield Oil Co.; N. H. Mull, Texas Co.; W. N. Roper, Western States Gasoline Corp.; T. L. Taggart, Standard Gasoline Co. (ex officio); R. C. Wheeler, General Petroleum Corp.

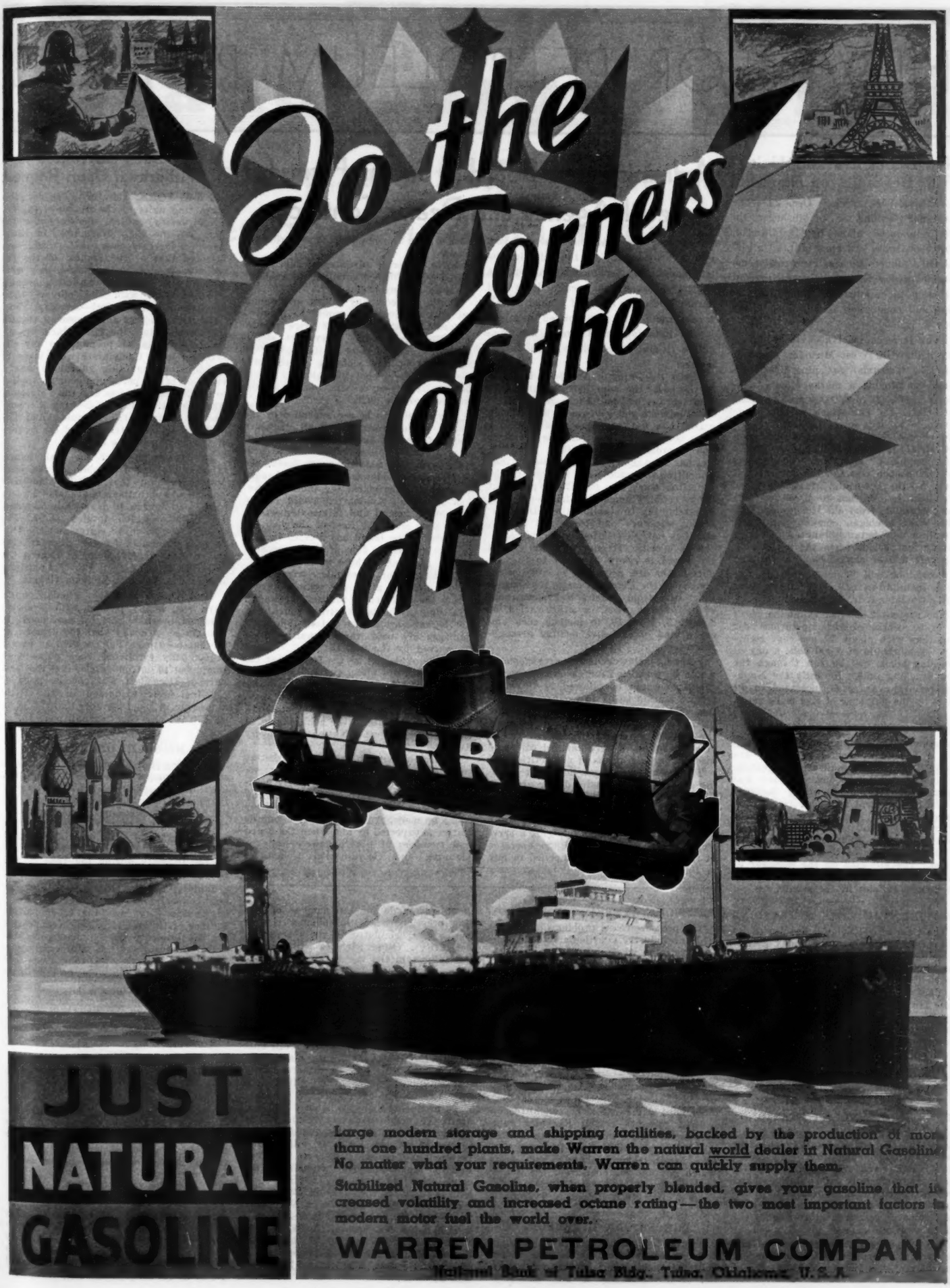
Active Class "B," W. Moeller, Jr., Southern California Gas Co.; H. N. Wade, Parkhill-Wade, Inc.

Active Class "C," W. A. Kirk, California Southern Oil Co.

Active Class "D," P. E. Fluor, Fluor Consolidated Co.; J. R. Hoffman, Smith-Booth-Usher Co.

CHANGE IN OWNERSHIP

The Buckeye Natural Gasoline Corp., Pittsburgh, has purchased the 21,000,000-foot capacity absorption natural gasoline plant in Section 41, Block 24, H.&G.N. Railway Survey, Wheeler County, Texas, from receivers. The plant was built in 1927 by the Phelps Gasoline Co., but has been operated by the receivers for some time.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Stabilized Natural Gasoline, when properly blended, gives your gasoline that increased volatility and increased octane rating—the two most important factors in modern motor fuel the world over.
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NEWS FOR PETROLEUM REFINERS

New Dubbs Cracking Unit to Be Built for Naph-Sol

MUSKEGON, Mich., Dec. 24.—The Naph-Sol Refining Co., of Muskegon, today announced plans for installing a $200,000 Dubbs cracking unit. Universal Oil Products Co. engineers will come here Thursday to draw plans with construction to be started within 15 or 20 days and completion is scheduled about May 1.

Long term contract also closed Saturday night with West Michigan Consumers Co., industrial gas pipe line operators, to provide a market for a minimum of 45,000 to 600,000 feet of 1,500 to 1,800 B.t.u. gas which will be made available to help solve the recent shortage of gas due to increased Muskegon industrial operations. The new supply will supplant emergency connections with Muskegon Gas Co. for natural fuel from Austin Township, Mecosta County gas field in addition to 2,000,000 feet daily available from old Muskegon Field. The West Michigan company will also install a new butane plant as auxiliary supply for periods when the new cracking unit will be shut down for cleaning.

Provisions will be made for the possible installation of a second cracking unit at a later date.

The present 2,000-bbl. skimming plant is to be continued in operation for naphthas with about 30 per cent recovery. A minimum of 1,000 bbls. a day of charging stock will be run through the new cracking unit. Recently the Naph-Sol refinery yard was increased to 14 acres by the purchase of five more acres.

FIVE-CENT PROCESSING TAX

Refineries operating in Louisiana will pay a 5-cent per barrel processing tax to the State as the result of a law credited to Senator Huey Long. The law was directed at all manufacturing facilities in the State except those involved in the bread and milk. The bill was introduced in a form similar to that introduced by Senator Long in 1929 for which passage a special session of the legislature was called. The bill died on the calendar at that time following the filing of impeachment articles in the senate.

CONTINENTAL LEASES STATIONS

The Continental Oil Co. has leased its filling stations in Denver and Colorado to individuals. Other companies, including the Standard Oil Co. of Indiana and the Texas Co. are in some instances taking similar steps in anticipation of a new state law which goes into effect January 1 putting a graduated tax on chain stores. The oil companies contend that the new law is unconstitutional, also that their facilities are not stores and not involved in the new tax law, but until these questions can be tested by the courts, leasing probably will be the rule.

BUYS INDEPENDENT STATIONS

The Sinclair Refining Co. has purchased the properties of the Independent Gas & Oil Co. operating stations in Utah, Idaho and Wyoming which include approximately 100 stations and was affiliated with approximately 200 dealers. The company also operates 35 bulk plants scattered throughout the States mentioned.

The announcement of the sale of the company was made by H. E. Johnston, president of the Independent Gas & Oil Co.

Administrative Board to Submit Forms for Retail Agency and Dealer Contracts

The Petroleum Administrative Board is ready to submit to the oil administrator definite recommendations on the subject of lease and agency, lease and license, and other forms of exclusive dealer contracts, and has invited members of the Planning and Coordination Committee to assist and advise them on the matter.

Under the terms of Article 5, Rule 19, of the code, the administrator may take whatever action he deems advisable to effectuate the policy of the code, but such action has not yet been taken pending some recommendation from the Planning and Coordination Committee. The subject has been under consideration by that committee for some time, but due to the unsettled marketing conditions prevalent in the country much time has been spent in attempting to stabilize the retail marketing structure and lease and agency, etc., has not been seriously considered.

The specific recommendations which the board is ready to make to the administrator are, according to a letter addressed to the Planning and Coordination Committee from Charles Fahy, chairman of the board, first, a modification of Article 5, Rule 19, to include each and every kind of exclusive dealing arrangement.

Second, exclusive dealer arrangements would be permitted for gasoline only. No company would be allowed to tie up a service station so as to exclude lubricating oils, greases and other petroleum products. Any threats of termination of the gasoline agreement if lubricating oils of other suppliers were handled would be made an unfair means of competition.

Third, in every legal document forming a part of an exclusive dealer arrangement a clause would be required permitting the retailer to terminate the arrangement upon 30 days' notice.

Fourth, any company supplying a service station leased to it by the operator of the station would be compelled to pay a flat rental upon the real property rather than to compute it on a gallonage basis.

Fifth, no price advantage would be allowed to any dealer handling the gasoline of one company exclusively.

Sixth, any company taking an account on an exclusive basis would be required to provide for, first, resale price maintenance, and secondly, observance of all conditions of the code by its dealers. In the event of any violation of the provisions by the dealer, the company would be required to cancel the contract at the earliest possible date.

The decision to be recommended by the board would require that all exclusive contracts be terminated on or before January 1, 1935, unless redrafted in accordance with the conditions set forth, the letter states. However, C. E. Arnott, chairman of the marketing subcommittee, has said that the matter would be the subject of formal and informal meetings some time after the first of the year, so apparently, the board has decided to hold off the applicable date of the recommendation until after these meetings.

In the case of cancelable contracts the dealer must be given the option of canceling the contract by mutual agreement. If a company holds a contract which may not be canceled unless certain liquidated damages are paid, these penalties must be waived by the dealer.

It was explained by the board that the decision will not affect the application of the antitrust laws to any form of dealer contract. Its purpose it is claimed is in accord with the terms of the oil code, and will contribute to the achievement of the purposes of the National Recovery Act.

Chairman Arnott, of the marketing subcommittee, stated that several suggestions of the board were particularly meritorious, and that when the discussions on the subject took place much headway could be made. An early decision on the matter is expected by him when the board and members of his committee and the planning and Coordination Committee confer.

PRESSURE VESSEL CODE READY

The pressure-vessel problems of the petroleum industry, particularly in petroleum refining where relatively high pressures, high temperatures and severe corrosion are frequently met, are such as to require special consideration. In order to provide a uniform basis for the construction and maintenance of unfired vessels used in this field, and at the same time not to disturb the uniformity brought about by the codes developed by the A.S.M.E. boiler code committee, a joint committee of the American Petroleum Institute and the American Society of Mechanical Engineers was organized. This joint A.P.I.-A.S.M.E. committee on unfired pressure vessels has now completed the first edition of the A.P.I.-A.S.M.E. code for Unfired Pressure Vessels for petroleum liquids and gases which can be obtained from the American Society of Mechanical Engineers, 29 West Thirty-ninth Street, New York.

GROSS TAX DIVERSION

Twenty-five parishes in Louisiana have voted to divert 1 cent of the gasoline tax collected within their borders for the relief of the unemployed. This announcement was made for the purpose of getting other parishes to adopt a similar course and originated in the federal relief offices. Other parishes will vote on the subject in the very near future.

MORE OIL FOR SINCLAIR

Sinclair Refining Co. has closed several of the deals pending whereby it will increase its crude supply for the Parco, Wyo., refinery and enlarge its retail outlets in the Rocky Mountain district. It acquired the leases, wells, gathering lines and equipment of the Ohio Oil Co. in Salt Creek. These included 82 stripper wells producing 325 bbls. a day, on 1,670 acres. The Ohio company retained half of the equipment in its compression plant in the Salt Creek Field. It will be dismantled and moved elsewhere, probably to New Mexico. Acreage transferred included the following: SW Section 1, E half Section 12, NW Section 12, E half SW Section 12, NE (except NW NE) Section 13-39-79, E half SE SE Section 7, E half NE NE Section 18, SE Section 17, NW NW Section 20, W half NW Section 29 and E half NE (except south 10 acres) Section 19-39-78, and NW Section 27-40-79.

Money-Back Guarantee Is Withdrawn Upon Request

NEW YORK, Dec. 22.—The domestic marketing units of the Standard Oil Co. (New Jersey) which operate under the name of the Esso Marketers, in newspaper advertisements this week, announced that at the request of the Petroleum Administrative Board, they were withdrawing the cash refund guarantee in connection with the sale of their new premium motor fuel—Aerotype Esso.

In their original announcement regarding the new fuel the Esso Marketers offered to refund the premium to any dissatisfied user. Complaints were made to Washington that this guarantee was a violation of the petroleum code as applied to marketing practices and the Petroleum Administrative Board following a recommendation from the Planning and Coordination Committee ordered the feature of sales campaign be dropped.

In announcing that the cash refund offer would end December 21 the Esso Marketers said that 500,000 motorists purchased approximately $1,000,000 worth of the new fuel in 10 days. Only 36 asked for refunds which totaled $8.84. The product is sold in 18 states and the District of Columbia by the Standard Oil Co. of New Jersey, Colonial Beacon Oil Co., Inc., Standard Oil Co. of Louisiana and Standard Oil Co. of Pennsylvania.

It is known that the Standard units have been highly pleased with reception accorded the new fuel by consumers. It was stated officially that the demand so far has been over 200 per cent in excess of company estimates when plans were completed to introduce the fuel the first part of December. The specifications of the fuel were explained in an article appearing in the December 6, 1934, issue of The Oil and Gas Journal, page 13.

MISSOURI OIL TAXES

Declaring that the petroleum industry's strongest competitor is the tax collector, Carl Barker, chairman of the Missouri Petroleum Industries Committee, warned the Northwest Missouri Petroleum Industries Committee that it must muster at full strength and wage open war against those who would shift more tax burdens on the industry during the 1935 legislative session.

James P. Kem, vice president and general counsel for White Eagle Oil Corp. of Kansas City, was the other feature speaker of the program. Mr. Kem pointed out the excessive burden placed on Missouri motorists through municipal gasoline taxes and warned that there are many interests that were now advocating county gasoline taxes.

H. A. Monson, district manager for Standard Oil Co. (Indiana) at St. Joseph, was elected permanent chairman by the 75 attending members.

NO FEDERAL OIL PROBE

EDMONTON, Alberta, Dec. 22.—The Alberta provincial government has been notified by W. W. Kennedy, the new chairman of the federal committee investigating price spreads, that in view of the short time before the committee reports to the federal parliament, investigation of gasoline and oil prices cannot be undertaken.

REBUILD OFFICE

KILGORE, Tex., Dec. 24.—Officials of the Southport Refinery Co. has ordered that work be started immediately in rebuilding the firm's offices, which were destroyed by fire. The fire caused a loss of between $7,000 and $10,000.

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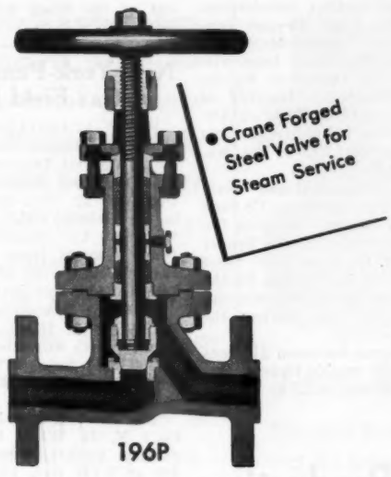

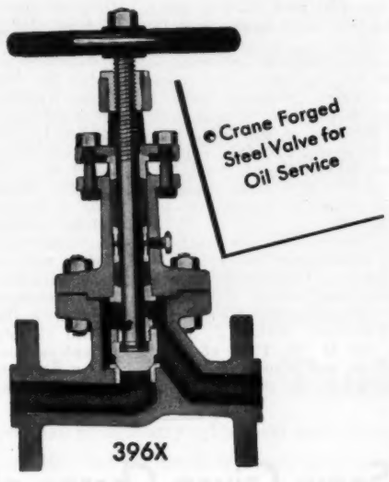

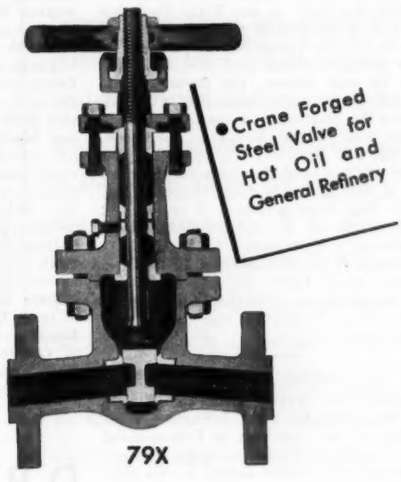

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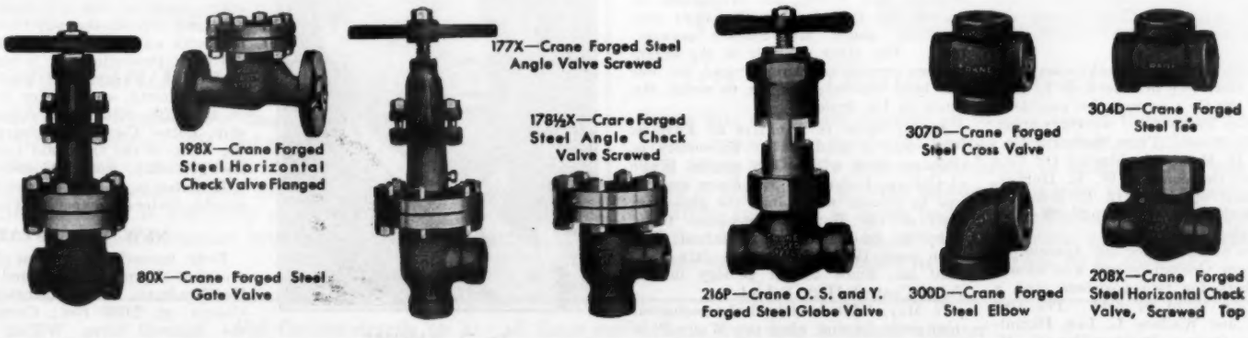
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Late Fields

KANSAS

Two big wells completed in the last half of November and the first part of December in the Burrton Pool, in Reno County, Kansas, have quit flowing and when put on the pump were showing a little water with the oil. They are Olson Oil Co. and Shell Petroleum Corp.'s No. 2, C SW SE NE Section 14-23-4w, a 6,000-bbl. initial producer, and National Union Oil Co.'s No. 2, C NW NE SE Section 14-23-4w, a 7,200-bbl. initial producer, both producing from Hunton lime.

OKLAHOMA

The Bay Oil Corp. has production in two sands in its wildcat northwest of the old Mervine Pool in Kay County, Oklahoma. On Monday it flowed 38 bbls. from Chat at 3,136-56 feet and 64 bbls. from Skinner sand at 2,960-3,013 feet. The crew was cleaning out to continue drilling.

A. W. Delaney of Ada brought in another big well in the Fitts Pool, his No. 2 A. J. Harden-A, SE SW NW Section 30-2-7. It flowed 588 bbls. the first hour through casing, and 350 bbls. per hour through tubing. He made a location for No. 3 on the lease, NW SW NW Section 30. Southeast of the field, Lynch, Sledge and others' No. 1-A Thompson, SW NE SW Section 1-1-7, will be drilled to the Wilcox sand. It produced about 85 bbls. a day by heads from Hunton lime, which had been acidized. A wildcat 2 miles south of the Lynch-Sledge well, Paramount Petroleum Co.'s No. 1 Graham, SW SE SW Section 13-1-7, was drilling below 1,300 feet and it is said the formations are running higher than in the Fitts Pool wells and the Lynch-Sledge well.

GULF COAST

HOUSTON, Tex., Dec. 25.—Stanolind Oil & Gas Co.'s No. 1 Surface wildcat test in the Hastings or Friendswood area of northern Brazoria county evidently has opened another deeply seated field for the Gulf Coast. The well was brought in over the week-end making an estimated 4,000,000 to 5,000,000 feet of gas daily and Monday was reported to be making some fluid, estimated at 5 bbls. hourly through three-sixteenths-choke with a pressure of 2,300 pounds. The oil tested between 38 and 39 gravity. Production is from a Marginulina sand with saturation from 5,975 to 5,990 feet. The 9⅝-inch production string of casing is at 5,975 feet. Top of the sand section was 5,948 feet. Location is in the W. T. Hughes Survey No. 2.

Dr. Bloesch Nominated by Tulsa Geologists

At the meeting of the Tulsa Geological Society the nominating committee, headed by Frank R. Clark, submitted a slate for officers for 1935. The election will be held January 7. The nominations follow:

President, Dr. Ed Bloesch, consulting geologist; first vice president, J. L. Borden, Pure Oil Co.; second vice president, G. S. Delle, Texas Co.; secretary-treasurer, S. H. Woods, Twin State Oil Co.; editor, T. H. Heistand, Silurian Oil Co.; members of the council, W. E. Horkey, geologist and operator; G. C. Siverson, Tide Water Oil Co., and G. H. Westby, Seismograph Service Corp.

Members of the American Association of Petroleum Geologists met and named five members for two positions, and a mail election is to be held. The five nominated are Wallace L. Lee, Okmulgee; Dean McGee, Bartlesville; E. H. Shea, Stanolind Oil & Gas Co.; Ira H. Crame, Pure Oil Co., and R. M. Whiteside, Shell Petroleum Corp.

A.P.I. IN TULSA MAY 14-16

Executive officers of the American Petroleum Institute have selected May 14, 15 and 16, 1935, as the dates for the organization's fifth mid-year meeting. Sessions, which generally incline to the technical, will be held in the Mayo Hotel at Tulsa.

East Texas Overproduction Reduced to an Estimated 13,000 Barrels Daily

By L. E. BREDBERG

FORT WORTH, Tex., Dec. 24.—Overproduction in the East Texas Field has dwindled to an estimated 12,000 to 13,000 bbls. per day, according to reports. This is the lowest total of reported "hot" oil produced in East Texas since in August, 1931, just before the National Guard was moved into the field, and is around 120,000 bbls. per day less than when the Federal Tender Board was set up at Kilgore, October 25, this year, to prevent interstate shipments of illegal crude or products.

Runs to refineries were curtailed to 24,470 bbls. per day during the week, or to about half of what they have been running. There are only 26 plants operating in the field with 55 shut down, many having been shut down since October 25.

There were 15,372 wells producing on December 18, 2,477 of which were classed as marginal wells. Marginal wells in this field are those which have an average hourly potential of 465 bbls. They are allowed to produce 20 bbls. per day, each, whereas other marginal wells have an average of 27.3 bbls. daily allocation. The field is averaging nearly 10 new producers each day.

Disquieting rumors were broadcast this week that a controversy had arisen between the Railroad Commission and the "Little Commission," which is made up of three East Texas business men, Tucker Royall, of Palestine; Walter P. Moore, of Overton, and R. W. Fair, of Tyler. This committee was appointed by the commission during the summer, to act as an unbiased group to meet with field men of the commission at Kilgore and pass upon the eligibility of crude oil for tenders for shipment. Some reports stated that the members of the "Little Commission" had tendered their resignations to the Railroad Commission, to become effective January 1.

Field men with the Railroad Commission will probably pass on tenders if the "Little Commission" withdraws. Capt. E. N. Stanley, head of the Railroad Commission's men at Kilgore, has set with the "Little Commission" at nearly all of its tender hearings, and has acted as advisor to that body.

The Federal Tender Board is to continue its operations without interference. Federal Judge Randolph Bryant continued the injunction against McMurray and others, restraining them from violating the production quotas set by the Texas Railroad Commission. Hearing on the injunction was held at Tyler on December 19. The suit indirectly involves the validity of Section 9-C of the National Recovery Act.

Judge Bryant also continued cases brought by the Union Refining Co. and others, and by the Century Refining Co. and others against the Federal Tender Board, not caring to pass upon these cases until a decision is rendered by the U. S. Supreme Court in the Panama and Amazon Refining Co. case against the federal oil administration.

Tank car movements decreased 216 cars this week under last week's figures, this week's total amounting to 1,340 cars of refined products of which 584 cars were gasoline, consisting of 4,744,860 gallons. Topped crude shipments fell from 687 cars last week to 282 cars this week, making 2,479,355 gallons. Casinghead gasoline held the same figure, 106 cars.

The following shows products, cars and gallonage shipped for the week:

	Cars	Gallons
Gasoline	584	4,744,860
Casinghead gasoline	106	906,765
Topped crude	282	2,479,355
Fuel oil	245	2,332,900
Gas oil	51	416,740
Distillate	51	417,770
Residuum	5	42,400
Kerosene	15	99,450
Naphtha	1	8,055
Total	1,340	

Products shipped under federal tenders amounted to 561 cars; under state tenders, 419 cars. There were 358 cars moved without tenders, all being moved on December 9, the day before the state tender order on refined products went into effect. There were 385 cars moved for coastwise shipping, 332 cars shipped out of the State and 621 cars moved intrastate.

D. R. Snow Given Charge of Production Department of the Barnsdall Oil Co.

E. B. Reeser, president of the Barnsdall Corporation, Tulsa, announces the appointment of D. R. Snow, vice president in charge of geology, to assume the duties formerly carried on by W. K. Whiteford of the production department, whose resignation, to become vice president for the British American Oil Producing company, Tulsa, has been accepted by the Barnsdall Oil company officials with regrets.

Messrs. Whiteford and Snow were promoted to the position of vice president April 1, 1932, and have worked together very closely in the company's interest and when Mr. Whiteford resigned the two departments were consolidated under Mr. Snow's management. The other officials of the organization remain unchanged and no one has been appointed as yet to assist Mr. Snow in his duties.

R. B. Snow is a native of Fayette, Ohio, and a graduate of University of Chicago, 1916, with a B.S. degree. While at Chicago University Mr. Snow specialized in geology and joined the geological staff of the Roxana Petroleum Corp. when he graduated and remained with them until 1917. From that date until 1920 Mr. Snow taught geology in the Tulsa Central High School.

In May, 1920, he joined the geological chief geologist and when the Waite Phillips Oil Co. was acquired by the Barnsdall Oil Co. in 1926 Mr. Snow went over to the Barnsdall organization. His advance since then has been steady and he was made vice president in charge of geology and land department in April, 1932.

Mr. Whiteford joined the Barnsdall organization in California after completing a course in mechanical negineering at Stanford University, graduating in 1923 and joining the Barnsdall Oil Co. in California in June, 1924. He department of the Waite Phillips Oil Co. and advanced to the position of was transferred to Oklahoma in April,

D. R. SNOW

1927, and advanced to vice president in charge of production in April, 1932. His work with Barnsdall Oil Co. has been of an outstanding character and it is with deep regrets that the officials of that organization have accepted his resignation to accept a position with the British American which promises to afford added scope for his managerial and engineering ability. Mr. Whiteford will continue to make his home in Tulsa.

New York-Pennsylvania Gas Field Developments

PORT ALLEGANY, Pa., Dec. 24.—Three completions were reported in the North Central Pennsylvania and Central New York gas fields in the week ended December 22. Two were producers, both in the Hebron Field. North Branch Development Co. completed its well on the Chloe Kenyon farm, Hebron Township, Potter County, for 25,000,000 feet at 5,240 feet, 14 feet in the Oriskany.

Lycoming Producing Co. brought in its W. White in Hebron Township, Potter County, with an estimated production of 14,500,000 feet. The Oriskany was reached at 5,208 feet and the well was completed 22 feet in the sand.

The third completion was Tri State Co.'s N. D. White in Bath Township, Steuben County, New York, which was dry at 2,722 feet, after drilling 12 feet into the Oriskany.

Two locations were reported, one in Potter County and the other in McKean County. Potter Development Co. made a location on the Penn Stave, Hebron Township, Potter County, and Electro Geometer Corp. made a location on the Armstrong-Forest farm in Norwich Township, McKean County.

Five wells are drilling in Potter County: Cunningham Natural Gas Co. on the George Carroll farm, Oswayo Township, 5,503 feet; Lycoming Producing Co. on the W. B. Hemphill, Hebron Township, at 4,000 feet, and on the R. and G. Carmer, Hebron Township, at 4,986 feet, and Potter Development Co. on the John Higley, Hebron Township, at 4,632 feet. Potter Development Co. is drilling deeper its B. L. Langworthy well in Hebron Township. It is now at 4,950½ feet after reaching the Oriskany at 4,942 feet and top of the pay sand at 4,944 feet with an estimated 11,000,000 feet.

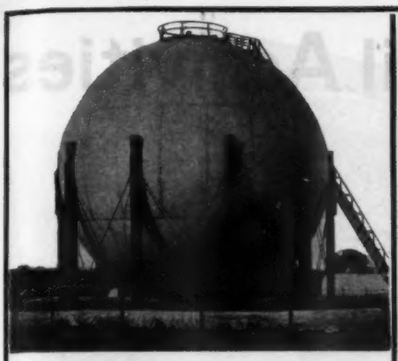
United Producing Co. is building a rig on the J. Ruppert, Hebron Township, Potter County, and Hanley & Bird a rig on the Effie Slingeland, Allegany Township, Potter County. Updegraph is moving a rig to the O'Donald farm in Genesee Township, Potter County.

E. Cabot is drilling on the W. F. Burroughs, Gaines Township, Tioga County.

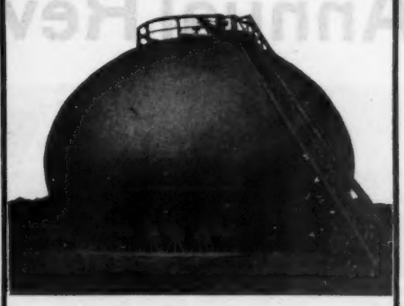
NEW YORK STATE

Four operations in New York State are shut down. Higgins and others, on the Steadman, Allen Township, Allegany County, at 2,600 feet; Cunningham on the Maxwell farm, Willing Township, Allegany County; A. B. Tutton on the Earl Dudson, Junius Township, Seneca County, 810 feet, and Trumbull on the W. B. Lasher, Throop Township, Cayuga County, at 900 feet.

Farnman and others are drilling at 3,235 feet on the Murray estate, Belfast Township, Allegany County; Harry Erwin at 350 feet on the Ed Fisk, Thurston Township, Steuben County, and Finance Oil & Gas Co. at 2,510 feet on the John Inman, Persia Township, Cattaraugus County.



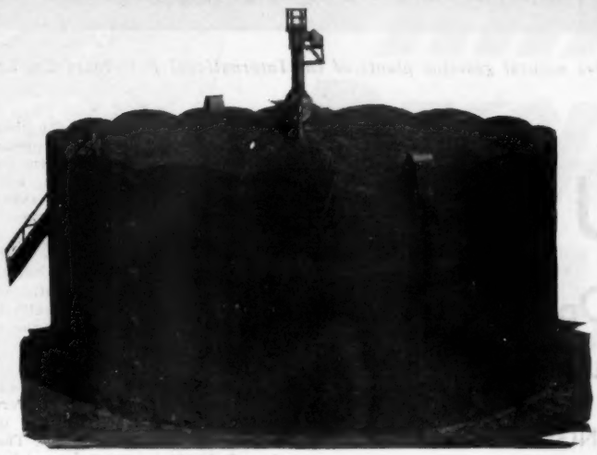
TANKS THAT STOP EVAPORATION LOSSES



The Hortonsphere

• • •

This container is a true sphere—the economical shape for the high internal pressure which it is designed to withstand. It can be built in large sizes—up to 20,000 bbls.—at a unit cost considerably less than that for a number of smaller pressure units. The Hortonsphere is built either for storing liquid or gas at pressures of 20 lbs. per sq. in. and up. Many years of experience prove the big savings which it can effect in storing "wild" products.



The Radial Cone Tank

This tank is shaped like an ordinary cylindrical tank except that the bottom and the roof are made of a series of radial cones and radial girders. This construction enables the tank to be designed for pressures up to 10 lbs., which, under many conditions, is adequate to hold products which sustain serious loss when stored at atmospheric pressure. These tanks are built in capacities from 30,000 to 80,000 bbls.

The Hortonspheroid

• • •

Since a spheroid has uniform stresses in the shell plates under a combination of full load and internal pressure, it is the ideal shape for moderate pressure units. It is ordinarily built in capacities from 5,000 to 30,000 bbls., and designed for an internal pressure of 10 to 20 lbs. per sq. in. It has been widely used for storing casing head gasoline. It stops all evaporation loss in such products when conditions do not exceed those for which the unit was designed.

The Wiggins Breather Roof

for standing storage tanks

Being in effect a flexible steel diaphragm providing a vapor space with a variable volume, this roof stops standing storage loss from tanks that are full or nearly full. It is suitable for standing storage of crude oil or gasoline which does not boil under atmospheric pressure. This roof is especially advantageous on tanks of large diameter where the maximum breathing capacity per square foot of area is attained.

The Wiggins Pontoon Roof

for working storage tanks

Since this roof floats directly on the surface of the liquid at all levels, vapor space inside the tank is eliminated and all breathing and filling losses are thereby prevented. In addition, the Pontoon Roof is designed to prevent boiling losses from products having a volatility sufficient to cause boiling only during the hottest hours of the day. This roof is effective protection against evaporation losses on all working tanks handling crude oil or gasoline.

For further details on any of these roofs, facts regarding actual savings, or quotations on any storage unit you are considering, address our nearest office.

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Annual Review of Foreign Oil Activities

One of the five natural gasoline plants of the International Petroleum Co. Ltd., in Peru

PERU

Producing and Refining Operations of the International Petroleum Company

By ARTHUR IDDINGS
International Petroleum Co., Ltd.

To those not directly concerned it may be surprising to learn that, according to historical records, Peru has been producing and utilizing petroleum products for nearly 400 years. No doubt this record would go back to much earlier days if the Incas had developed a method of recording their activities in writing or some other form of permanent records. That oil seepages have existed in Peru for many thousands of years has been proven within the last three years through the discovery of elephant bones in the area of some of the existing seepages at La Brea, on the La Brea-Parinas estate of the International Petroleum Co., Ltd. This elephant must have wandered into the area of the seepage during Pleistocene times and his bones have been preserved "in oil." Thus oil seepages have existed here for 20,000 to 50,000 years.

The producing and refining operations of the International Petroleum Co., Ltd., in Peru are located on the La Brea-Parinas estate in northern Peru. The estate consists of nearly a half million acres and includes within its boundaries the most westerly point (Punta Parinas) of the South American continent. It lies between 4 and 5 degrees south latitude and is bordered on the west by the Pacific Ocean. In a north-south direction it extends for a distance of approximately 38 miles and from the sea coast inland a distance of approximately 30 miles.

The area lies in the northern end of the desert belt which extends for some 2,000 miles along the west coast of South America. As may be inferred from the above, the rainfall is very small. In normal years there may be a few light showers during the latter part of February or in March. The total of these may amount to from 1 to 3 inches. However, at 30-35 year intervals a heavy rainfall occurs during the above mentioned months. This may amount to 35-40 inches. The last rainfall of this nature occurred in the year 1925 and serves as a convenient reference date for other events occurring before and after that year. It was the year of the "Big Rains."

Contrary to what the average person would expect in a country so near the equator and at sea level, the climate is comparatively cool. The minimum temperature is about 55° with a maximum of 95° F. A sultry day or night is a rare occurrence due to a continuous cool breeze from a southerly direction. In the early morning this breeze is from the southeast and gradually swings around to the southwest later in the day. This wind is strongest during the cool months of the year, or from the latter part of April until mid-November. During these months the wind is frequently of sufficient force to carry along with it considerable quantities of sand and the dunes begin their yearly march.

The Humboldt Current, a cold Antarctic stream which flows northward along the west coast of South America, is responsible in large measure for the character of the local climate. It so happens that this current is met by a warm current from the north ("El Nino"), north of Talara. These two currents then turn westward into the Pacific Ocean. Their junction marks the end of the desert area from the south and the beginning of the tropical area to the north. A notable shifting, to the south, of the junction of these currents results in the periodic heavy rainfall along the desert coast.

Topography

A comparatively narrow area extends along the northwest coast of Peru between the sea and the foothills of the Andes in the form of a terrace. The covering of this terrace was formed beneath the sea and then elevated above it, probably during Pleistocene time. The major part of the La Brea-Parinas estate is located on this terrace, but extends eastward into the Amotape Mountains, a low spud from the main Andean system, which in this locality reaches an altitude of from 2,000 to 3,500 feet. The terrace, locally known as the "Tablazo," has been in part dissected by streams cutting back into it from the sea coast. This stream erosion has developed in some sections a typical "bad lands" type of topography. There are other areas where crescent-shaped sand dunes form the most characteristic feature.

Geology

No attempt will be made here to enter into a full discussion of the geology of the area; however, a few pertinent facts may be of interest to the reader. The petroleum production of this part of Peru comes entirely from Tertiary formations. These formations, on the La Brea-Parinas estate, are of Eocene and Oligocene age with the former the chief source of petroleum. The section here consists of approximately 18,000 feet of sediments composed almost entirely of sandstones and shales. These were deposited in moderately deep to shallow marine waters. Interruptions in the deposition of these sediments are marked by unconformities of considerable importance.

Deposition of the Tertiary sediments was followed by a general uplift with locally developed high structural areas. These local areas, together with coarse sandstones and conglomerates developed at some of the unconformities, created favorable structural conditions for the accumulation of petroleum. The uplift and subsequent submergence were accompanied by a great amount of faulting which also had some effect in controlling the present location of the petroleum deposits.

The Tablazo formation, of Pleistocene age, consisting of conglomerates, marl, sandstone and shale, was deposited on the irregularly eroded Tertiary strata. This formation, which reaches a thickness of 400 feet and lies in a nearly horizontal position, is a conspicuous feature today where it overlies truncated Tertiary strata and forms the crest of many escarpments. In areas where little erosion has taken place it forms a blanket over the older formations, thus effectively preventing a study of their structure.

Field Development

The early colonial historians record that shallow pits were dug in the vicinity of oil seepages at La Brea in order to increase the production of the oil. This oil was then heated in earthen jars so as to secure the tarry residue. This substance was used in lining earthenware jars holding fermented beverages, tarring rope and tackle and caulking ships. This method of production and use of products continued until comparatively recent times.

Sporadic attempts to develop the petroleum deposits on the La Brea-Parinas estate on a greater commercial scale date back to 1868. Fairly successful results were not attained until about 1888. From this time until 1914 the property was operated by the London & Pacific Petroleum Co. and an annual production of about 1,400,000 bbls. had been developed. At this time the property was purchased by International Petroleum Co., Ltd. Up to 1919 the annual productiontion had been increased to 1,800,000 bbls. At this time a more aggressive campaign was started, including a more detailed geological study of the property for the purpose of selecting the most favorable areas for development.

Production by Years

The result has been a production of 11,200,000 bbls. in 1933 and this will probably exceed 14,000,000 bbls. during

View of Talara, Peru, showing village and bay, including refinery and tank farm of the International Petroleum Co., Ltd.

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the present year. The production by years is shown in the accompanying table.

	Barrels
1890	8,132
1891	35,080
1892	127,620
1893	70,900
1894	53,175
1895	45,955
1896	43,688
1897	28,360
1898	76,783
1899	135,292
1900	202,860
1901	226,638
1902	195,116
1903	253,380
1904	276,602
1905	318,881
1906	327,492
1907	408,148
1908	564,659
1909	768,480
1910	802,322
1911	920,366
1912	1,116,305
1913	1,405,756
1914	1,327,726
1915	1,820,723
1916	1,882,249
1917	1,806,985
1918	1,820,814
1919	1,861,291
1920	1,993,349
1921	2,825,579
1922	4,386,938
1923	4,637,109
1924	6,477,662
1925	7,347,607
1926	8,532,125
1927	7,768,139
1928	9,503,721
1929	10,821,116
1930	9,766,921
1931	7,675,719
1932	7,635,681
1933	11,205,363
1934 (estimated)	14,100,000

As will be seen from this table the total production of the property since 1890 to the end of 1934 will probably reach 133,669,759 bbls.

To date the total number of wells drilled is 2,840; 1,810 of these wells are still producing. The average life of the wells is from 10 to 11 years, although some have been producing for 33 years. Their depth ranges from 60 feet to 3,500 feet with an average of 1,800 feet.

Cable Tool Drilling

Cable tools have been used almost exclusively for drilling. They have been very satisfactory for the greater part of this work as the wells are comparatively shallow and there is usually some uncertainty as to the depth at which producing formations will be encountered due to the great amount of faulting and the lenticular nature of some of the sands. At the present time rotary tools are being used on the deeper wells and on those in areas of high gas pressure, as this provides a better control upon reaching and drilling through the producing sands.

In some sections of the field, bottom water is encounted in small volume. It is generally possible to avoid encountering this by limiting the depth to which the well is permitted to drill into the producing sand. When encountered, the usual methods of using cement and/or lead wool to plug back are used.

In nearly all sections of the field, water is encountered in the shallow sands above the producing formations. In order that there may be no corrosion of the casing, the shut-off string is usually cemented to the surface, thereby insuring a permanent job.

The spacing of wells is that which is considered to give the greatest return on the capital invested in drilling them. Since there are no neighboring competitive lease holders, the rate of drilling is that which is determined by the amount of oil required. This naturally eliminates wasteful competitive methods so common in many fields.

Production Methods

The wells are produced by natural flow, gas lift (both continuous and intermittent), individual pumping powers and central pumping powers. In all producing operations every effort is made to produce at the minimum gas oil ratio. This is accomplished by using tapered tubing, regulating back pressure, placing pump at proper depth, intermittent gas lift, shutting off as much of the gas bearing section of the producing formation as possible, etc.

To allow a well to produce by natural flow is rare as the gas oil ratio from the sand can generally be reduced by using gas lift. Continuous gas lift is used on wells during the period that their production is too large to be handled conveniently by pumping.

An individual pumping unit is installed on a well during the period that its production is too large to be taken care of by connecting it to a central power. A well is also so equipped if it is an exceptionally deep one or if too isolated from a central power.

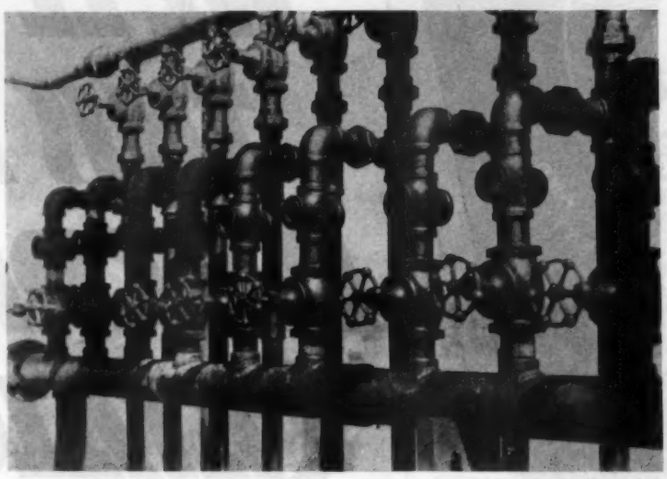
The central pumping powers used here are of the geared wheel eccentric type with a gas engine supplying the power. The number of wells connected to one power depends upon the depth and size of the well, the topography and the spacing of the wells. The average number is about 12, although the number may vary from 6 to 40.

The normal speed for operating the central powers is about 16 strokes per minute although some powers pumping small wells have been geared down to two strokes per minute. This slow motion decreases maintenance costs and at the same time actually increases production. The latter is probably due to maintaining a uniform fluid level in the well and at the same time keeping the producing sand face covered with oil.

Few Pumping Troubles

Well pumping here is comparatively free from the troubles encountered in some fields. There is very little water to be handled, sand entering a well in sufficient quantities to interfere with pumping is a comparatively rare occurrence, and corrosion of pumping equipment in the well to any great extent is rare. In a few cases trouble is encountered with paraffin being deposited in the tubing.

Whenever possible, jerk lines are installed with a sag in the line. This has two advantages over the horizontally installed line. It decreases the friction of the line on the supports and reduces to a minimum the amount of motion lost in transmitting this from the central power to the pumping jack. "Hook-offs" are installed at the central power for each jerk line so that pumping on any well may be stopped at any time. The type of hook-off installed reduces to a minimum the possibility of an accident to the man performing the operation.



Section of one battery of well lead lines with lookboxes in producing operations of the International Petroleum Co. Ltd., in Peru

Repressuring of the producing sands with gas was started here during the latter part of 1927. Since that date 38,144,445,000 cubic feet of gas has been returned to the sand in different sections of the field. At the present time approximately 22,000,000 feet are returned daily. Experience has shown that gas returned to the crest of a structure gives the best results.

The success of repressuring in some pools has been phenomenal, whereas in other sections of the field only individual wells have been slightly affected and the process has been a failure. In every case where the process has been a failure it has been in an old section of the field where wells were completed in a careless manner and where no effort had been made to seal off the producing sands when a depleted producer was abandoned.

Repressuring as a whole has been highly beneficial both in increasing the ultimate production expected, the rate of production and in the conservation of gas. Whenever a new pool is discovered at the present time, an attempt is made to maintain the original pressure through starting the introduction of gas as soon as production is started from that pool. The pressures required for returning gas to the producing sand now range from 45 to 880 pounds per square inch.

Only gas-tight gauge tanks are used in sections for receiving the oil from the wells after it has passed through gas separators. In the smaller sections these tanks are locally made riveted ones, whereas in the larger sections bolted tanks capable of withstanding a pressure of 3-4 oz. are used. Theee are equipped with a liquid seal to prevent evaporation losses.

Each battery of tanks is equipped with equalizers so that the minimum amount of air will be admitted to any tank when it is being emptied and so that the minimum amount of gas will be expelled when the tank is being filled. A locally developed type of "look box" is installed on each lead line at the tank battery so that the pumper may observe the nature and quantity of the liquid coming from any well at any moment. This "look box" consists of a specially cast cross with two opposite sides fitted with glass.

All gauge tanks and storage tanks are painted with either aluminum paint or a light gray paint so as to reflect the sun's rays as much as possible and keep the temperature of the tank to a minimum to prevent evaporation losses. The main field gauge tanks are equipped with Wiggins floating roofs for the same purpose.

Five Gasoline Plants

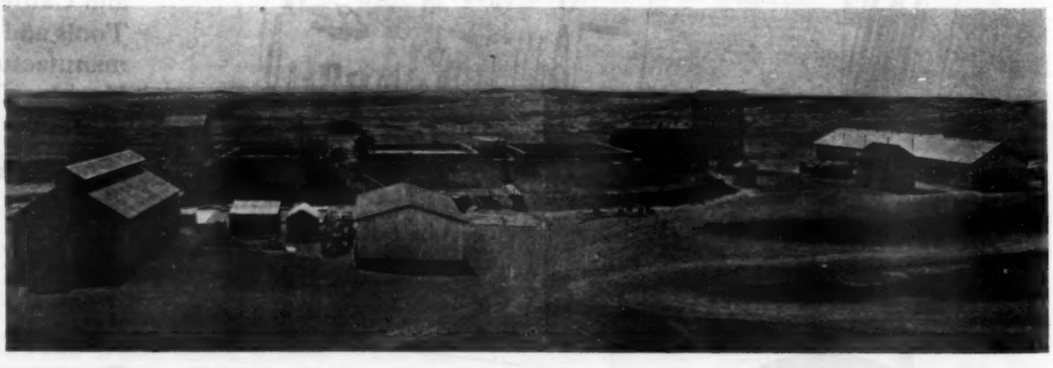
All wet gas is treated for its casinghead gasoline content. The absorption method of extraction is used. Five plants are located at strategic points throughout the producing field for the handling of this gas. These plants have a capacity enabling them to handle 51,000,000 cubic feet of wet gas daily. The casinghead gasoline produced is passed through a stabilizer and the more volatile or "wild" fraction are eliminated, thereby giving a more stable and better product.

From the field plants the casinghead gasoline is pumped to the refinery at Talara for storage. Specially constructed storage tanks, each having a capacity of 55,000 bbls. and capable of withstanding a pressure of 10 pounds serve as storage. This type of tank pressure insures that there will be no evaporation loss.

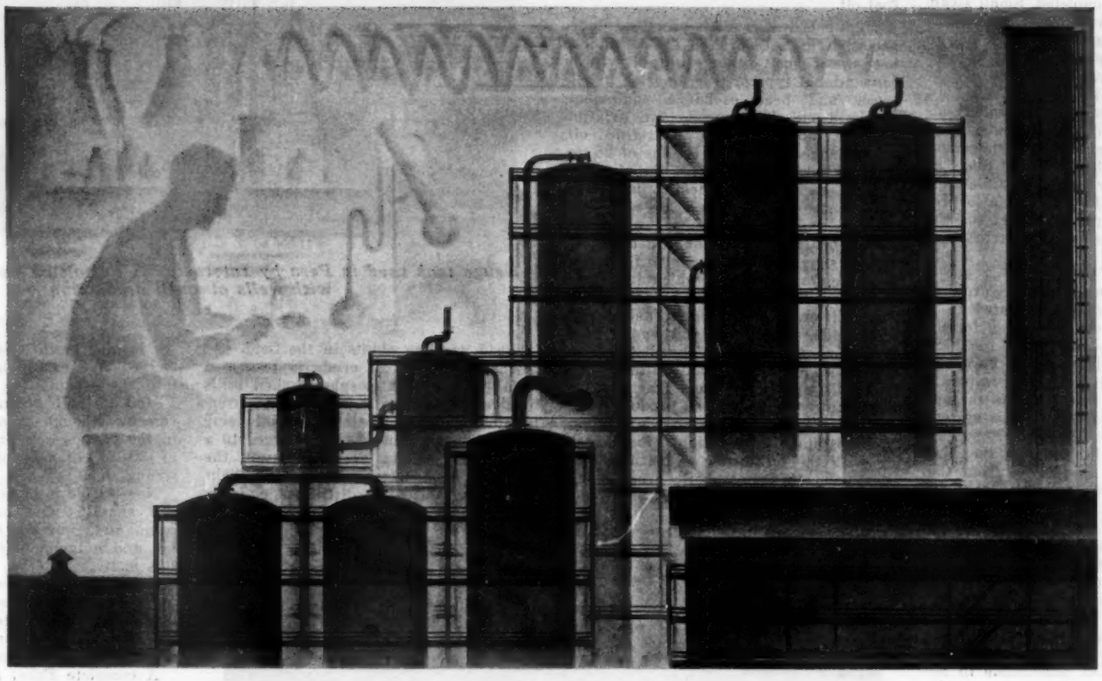
The casinghead gasoline is largely blended with other gasolines at the refinery, but some of it is shipped in bulk. The dry gas from the gasoline plants is used in part as fuel throughout the field and in the refinery and the remainder is compressed within the plants and returned to the producing sands.

A study of the conservation measures used on the La Brea-Parinas estate shows that they are the equal of those used in any field. Contrary to the usual practice, pipe lines here are not buried but rather are raised above the ground on supports. This practice is necessary as the soil contains minerals, chiefly salt, which tend to produce rapid corrosion of pipe lines and tank bottoms unless some preventive measures are taken. Dust and sand carried by the wind as well as the moisture from the ocean carry salt particles which become attached to metal surfaces and frequently cleaning and painting is required. This is especially true of the pipe lines as they lie near the surface of the ground where the greatest movement of dust and sand takes place.

Transportation throughout the field is by means of railroad and motor vehicles. A narrow gauge, 30-inch, railway system was constructed from the port of Talara throughout the field during the



Main water pump station at Portachuelo, Negritos, of the International Petroleum Co. Ltd., in Peru



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early days of development and before truck transportation had reached its present high efficiency. This was necessary at the time in order to haul the heavy materials over the sand covered areas. Branch lines are built to each drilling location and then removed when the well has been completed. Small steam locomotives and Fordson tractors mounted on rails serve as the motive power. At the present time the railway is used chiefly for the transportation of the heavier materials and supplies.

A complete system of automobile roads has been also constructed throughout the property. The lighter materials are transported by truck over these roads as the truck is a much more flexible unit than the railway. These roads also provide a means of rapid transport for the supervising personnel and workmen.

Water Supply

Water supply is an important problem in a fairly large oil field located in a desert. Although water-bearing formations exist here, the water has too high a saline content to be potable. This was early recognized and units for evaporating sea water were installed. As the operations increased in extent, this system proved inadequate. The water supply system at present in use was then installed. The water is secured from the Chira River, a stream which heads in the mountain area and flows seaward across the coastal desert belt. This stream is located about 30 miles south of Talara and about 25 miles from the main field development. It flows in a wide valley where a broad alluvial plain has been developed. When in flood stage the course of the main current has been known to shift over a wide area. Due to this shifting it is not practicable to locate a large pump station in the main valley near the present stream course.

The main water pump station is located at Portachuelo on high land, about 4 miles from the main stream. This main station consists of settling basins, chlorinator, high-pressure pumps and power generators. A small, portable auxiliary station is located on the river bank for pumping the water to the main station. The capacity of the main station is approximately 32,000 bbls. per day.

From Portachuelo the water is pumped through a main line to a distributing system in the field and to the refinery at Talara. Storage capacity sufficient for several days' storage is located at all strategic points. In addition to supplying all industrial requirements, a sufficient quantity must be provided for taking care of some 20,000 inhabitants on the property.

Refinery

The refinery is situated at the port of Talara. Crude oil processed at the refinery is of two classes:

1. High cold test Peruvian crude, of approximately 38.3 degrees A.P.I., which, as the name indicated, is a wax-bearing crude.

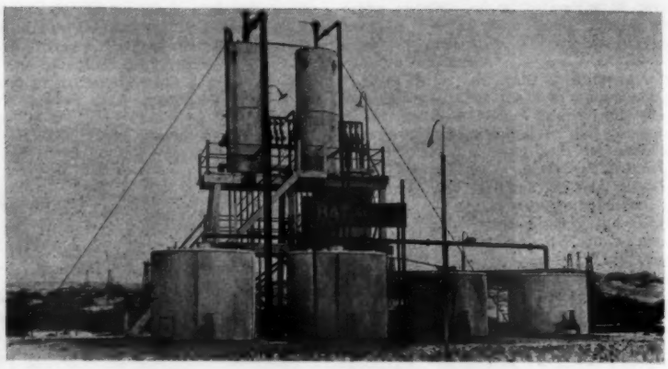
2. Low cold test Peruvian crude of approximately 35.1 degrees A.P.I., which is non-wax bearing.

The former is run primarily for gasoline, refined oil and fuel oil, and the latter primarily for lubricating oils, with the attendant production of gasoline and fuel oil.

High cold test crude is processed under atmospheric pressure in a continuous battery of shell stills equipped with a conventional type of fractionating bubble tower and heat exchange equipment, overhead cut being made for aviation gasoline, motor gasoline and refined oil, while the reduced crude residue of 28 degrees A.P.I. is used either for fuel oil or feed stock for the cracking units. All natural gasolines receive a lye wash and sodium plumbite treatment, while the refined oil receives a light acid treat followed by lye and clay treats to finish.

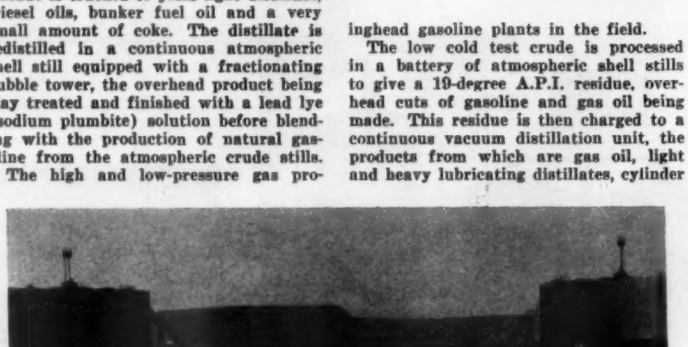
In the cracking units, which are of the Tube and Tank type, the reduced crude residue is cracked to yield light distillate, Diesel oils, bunker fuel oil and a very small amount of coke. The distillate is redistilled in a continuous atmospheric shell still equipped with a fractionating bubble tower, the overhead product being clay treated and finished with a lead lye (sodium plumbite) solution before blending with the production of natural gasoline from the atmospheric crude stills.

The high and low-pressure gas produced at the cracking units, together with the gas produced at the crude batteries, passes through an absorption plant, the production of light gasoline from this source is lead lye treated and blended with the heavier natural and cracked fractions in accordance with gasoline specifications. This absorption gasoline production is augmented by the absorption product produced in the casinghead gasoline plants in the field.



Gauge tank used in Peru by International Petroleum Co. Ltd., in areas with wells of small production

The low cold test crude is processed in a battery of atmospheric shell stills to give a 19-degree A.P.I. residue, overhead cuts of gasoline and gas oil being made. This residue is then charged to a continuous vacuum distillation unit, the products from which are gas oil, light and heavy lubricating distillates, cylinder stock and a pitch residue which is fluxed with fuel oil. The light lubricating distillate receives a hot lye treat and is then redistilled in the batch vacuum still and fractioned into cuts corresponding to the lighter grades of lubricating oils. These overhead cuts are then treated with sulphuric acid, and finished with a lye wash. The heavy lubricating distillate is not hot lye treated but is redistilled in the batch vacuum still and fractionated into cuts corresponding to the heavier grades of lubricating oils, each individual cut being treated with sulphuric acid and finished with a clay treat by the "contact" process.



Natural Gasoline storage tanks at Talara, Peru, of the International Petroleum Co. Ltd., capable of withstanding pressure up to 10 lbs. per square inch

Steam is generated in a central boiler house by four Erie and two Kidwell boilers, with a total capacit yof 1,600 B.H.P. per hour at 130 pounds pressure. Salt water for condensing, cooling and sanitary purposes is supplied by one 5,000 and one 6,000-gallon per minute motor-driven centirifugal pumps stationed under one of the moles.

The power house contains 10 units with a total capacity of 2,600 horsepower. about 1,700 K.W. These units generate at 440 volts, 25 cycle, three phase. Shipments of crude oil and refined products are made in bulk by tank steamer in steel drums and in cans, and the refinery is fully equipped to manufacture its own steel drums, cans and cases.

Three Loading Berths

The refinery is equipped with three loading berths, i.e., two mole berths inside of a small natural harbor, and one sea loading berth which is a 12-inch submerged line extending about 6,000 feet into the ocean. The mole berths, Nos. 1 and 2, will accommodate large-sized vessels, although on account of the swell in the bay, vessels are generally moored at 30 to 40 feet off berth and hose strung out.

No. 1 mole is of concrete construction and contains five cranes for handling cargo, and, generally speaking, all incoming and outgoing cargo is handled over this mole.

No. 2 mole is of wooden construction and piles, and is used solely for bulk loading. Loading rates as high as 9,000 bbls. for crude oil and somewhat lower for other products are obtained.

A complete Ethyl mixing plant is installed for the preparation of Ethyl aviation and Ethyl motor gasolines. An elaborate system of fire protection is installed, consisting of two complete foamite installations, and also two high-pressure salt water pumps, each capable of throwing 250 gallons per minute at 125 pounds pressure. These pumps take suction directly from the low-pressure salt water system which is maintained at about 20/15 pounds pressure.

A large two-story building contains the control and experimental laboratory under the jurisdiction of qualified chemists, where all products are carefully checked before shipment, and where new processes are continually developed.

The laboratory is equipped with two knock-rating engines for the determination of octane numbers on various gasolines.

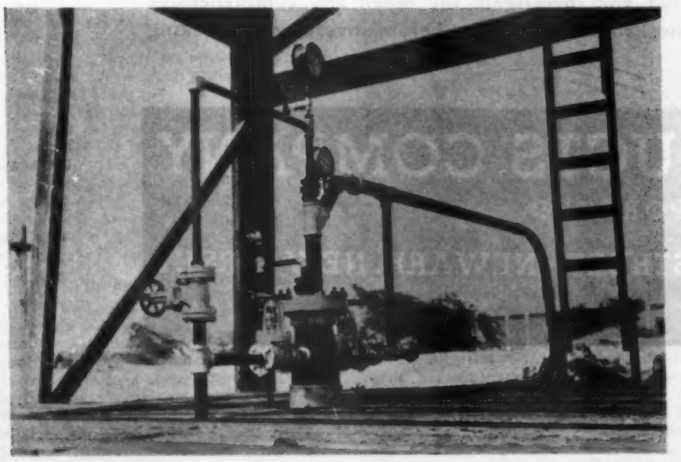
General

On account of the great distance from the sources of supplies for oil field and refinery materials, it is necessary to stock several months' requirements. For the same reason it is necessary to maintain large, well equipped machine shops for all types of repair work and the fabrication of minor equipment.

No large centers of population existed on or near the La Brea-Parinas estate at the time that actual development of the oil field began. The present centers are dependent entirely on the petroleum industry for their continuance. For these reasons it has been necessary for the International Petroleum Co., Ltd., to provide and maintain all facilities necessary to modern communities.

There are two main centers of population—Talara and Negritos. The refinery, general offices, port and shipping facilities, government offices and main tank farm are located at Talara, which has a population of 8,800. The main field camp is located at Negritos, approximately 6 miles south of Talara along the coast, and has a population of 5,300. Small groups are distributed in various sections throughout the field so that the total population amounts to about 20,000.

It is necessary to provide houses, schools, hospitals, churches and social clubs for all of these. There are some 3,500 children matriculated in the schools this year. Large hospitals are maintained at Talara and Negritos and dispensaries at necessary points throughout the field.



Gas lift hookup on well of International Petroleum Co. Ltd., at Negritos, Peru

REFINING PERSIAN OIL

Yield of Motor Fuel May Be Greatly Increased By Cracking Residuum

By GUSTAV EGLOFF and EDWIN F. NELSON
Universal Oil Products Co.

The Persian oil fields are amazing in sustained production. These fields are under close scientific and technical control, which is probably unrivalled anywhere. Sir John Cadman, chairman of the Anglo-Persian Oil Co., Ltd., gives an interesting review of Persian oil production[1]. He states that "at Masjid-i-Sulaiman, the producing horizon is the Asmari limestone and the productivity is high. Initial well production under standard test conditions average 20,000 bbls. per day, and in certain wells productions as high as 40,000 bbls. per day have been obtained against back pressures exceeding 600 pounds per square inch. In routine operation well productions are restricted for reservoir control purposes. The closed-in pressures of oil wells average about 700 pounds per square inch. Gas well pressures are of the order of 1,500 pounds per square inch. Producing gas-oil ratios are of the order of 480 feet per barrel.

"The pressure in the gas dome of the Masjid-i-Sulaiman Field has dropped only 5 pounds per square inch—approximately 1 per cent—during the past four years, although a production of nearly 20,000,000 tons has been drawn from the field during that period."

The crude oil production for the two fields of Persia—Masjiki-i-Sulaiman and Haft Kel—for the year 1933 was 54,732,343 bbls[2].

The Petroleum Times[3] reports the products produced from processing 20,000 bbls. a day of Persian crude oil as follows:

Representative Yields

A representative Persian crude oil was topped and cracked in a pilot plant, operating under the principles of the Dubbs cracking process and the charging stocks and products analyzed.

The yield of finished 70 octane gasoline (motor method) based upon the original crude oil by the process of cracking naphtha, topped crude and blending the light gasoline fraction of the crude, was 61.3 per cent as shown in the following summary:

	% of Crude	Octane No.
E.P.)	16.4	67
Straightrun gasoline (250° F.,		
Cracked gasoline from naphtha (400° F., E.P.)	11.4	74
Cracked gasoline from topped crude	33.5	70
Total gasoline	61.3	70

The crude oil processed had the following properties:

Persian Crude Oil

Gravity, °A.P.I.	37.6
Gravity, specific	0.8368
Sulphur, per cent	1.02

Engler 100 c.c. Distillation

	°F.
Initial B.P.	133
Distilled over, per cent:	
5	148
10	215
20	283
30	355
40	437
50	531
60	609
70	687
80	727
90	753

Total distillate:	%
Distilled over	97.0
Coke by weight	2.5
At 400° F.	35.5
At 437° F.	40.0
At 572° F.	56.0

The gasoline of 400° F. endpoint representing 35 per cent of the Persian crude oil had an octane number of 54. This value octane gasoline is too low for the modern motor car, due to its tendency to knock. Modern practice of refining this type gasoline calls for a distillation into a light gasoline and then reforming the naphtha fraction into high octane gasoline. The light gasoline is blended with the cracked so as to produce a finished motor fuel having 70 octane number, motor method.

The crude oil was fractionated into a light gasoline which has a relatively high antiknock value naphtha and topped crude. The following are the yields and properties of the products produced from this operation:

RESULTS OF TOPPING PERSIAN CRUDE

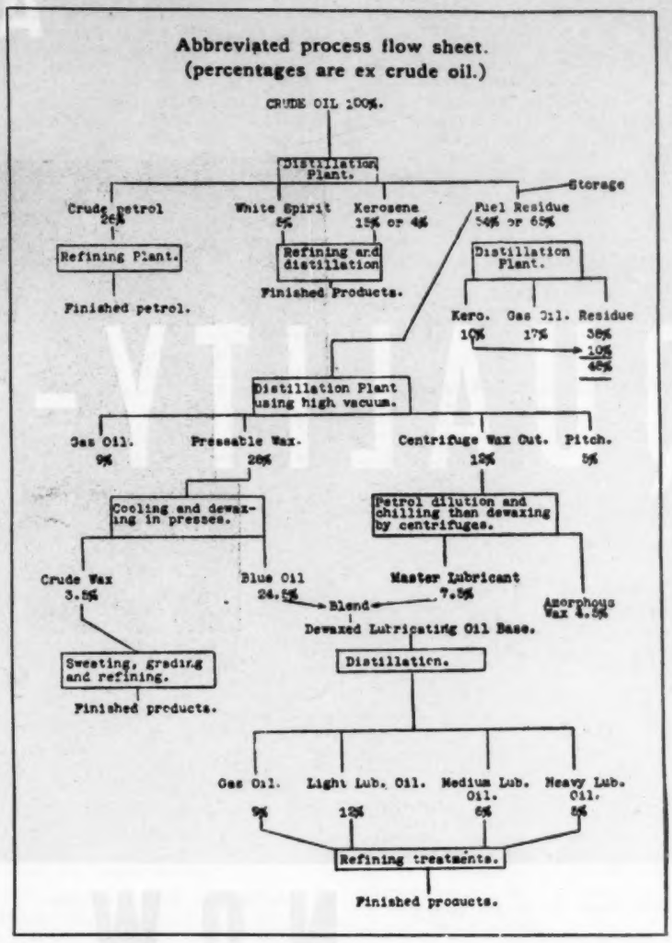
Products:	% by volume
Light gasoline	16.4
Naphtha	16.7
Topped crude	62.3
Distillation loss	2.6

Properties of Light Gasoline and Naphtha

	Light gasoline	Naphtha
Gravity, °A.P.I.	75.5	51.1
Color, °Saybolt	30	30
Color, °after exposure to carbon arc	30	30
Doctor test	Positive	Positive
Corrosion, 3 hrs. at 122° F.	Positive	Positive
Gum Mg./100 c.c. (copper dish)	1	9
Sulphur, per cent	0.03	0.14
Octane Number, Research Method	67	38
Octane No., Motor Method	67	38

100 c.c. A.S.T.M. Distillation

	°F.	°F.
Initial B.P.	91	265
Distilled over, per cent:		
5	108	280
10	120	283
20	133	289
30	143	296
40	153	302
50	163	308
60	172	316
70	183	325
80	195	336
90	211	353
Endpoint	249	406
Per cent over	98.0	99.0
Per cent bottoms	1.0	1.0
Per cent loss	1.0	0.0



Cracking Naphtha

In order to improve the octane number of the straightrun naphtha, this fraction was processed in a Dubbs pilot plant using the "once-through" method of operation. The naphtha was charged direct to a heating coil held at an outlet pressure of 750 pounds. Temperatures of cracking ranging from 950 to 1,000° F. were used to produce various octane number gasolines. The hydrocarbon mixture passes from the heater to a low pressure fractionating column and the gasoline vapors were removed from the top of this column while residuum was continuously withdrawn from the bottom.

A summary of the yields and analyses of the products from this operation are given in the following table:

Run No.—	1	2
Transfer temperature, °F.	975	1,000
Gasoline:		
Pct. by vol. of naphtha	69.9	60.8
Gravity, °A.P.I.	50.6	50.8
50% point, °F.	285	289
90% point, °F.	351	366
Endpoint, °F.	405	397
Vapor pressure, lbs./sq. in. (Reid)	9.0	9.4
Octane No.:		
Research method	81	82
Motor method	73	75
Residuum:		
Pct. by vol. of naphtha	4.0	5.9
Gravity, °A.P.I.	15.5	9.3
Initial B.P., °F.	350	365
Gas, cu. ft./bbl. of naphtha	777	932
Gas and loss:		
Pct. by vol. of naphtha	26.1	33.3

The relation of yields of gasoline for different octane number gasolines are shown graphically in Figure 1.

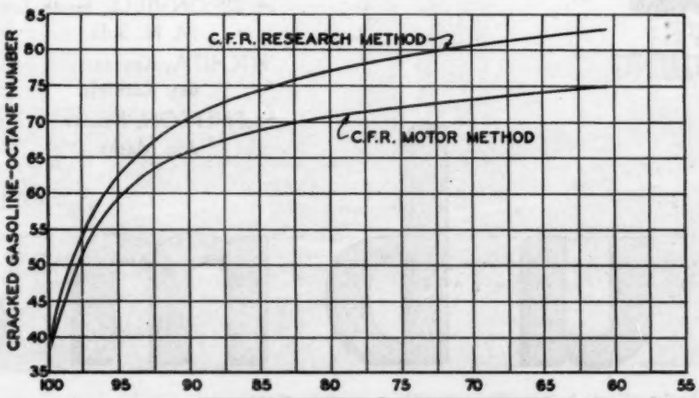


FIG. 1

Analysis of Cracked Products

In order to produce an overall 70 octane motor fuel from Persian crude oil, it was desirable to produce a 75 octane gasoline from the naphtha fraction as was done in Run 2. The gasoline produced from this run was analyzed and treated. In addition, the properties of the residuum and gas were determined.

(a)—UNTREATED CRACKED GASOLINE	
Gravity, °A.P.I.	50.8
Color, °Saybolt	17
Sulphur, per cent	0.05
Peroxide No.	0.06
Vapor pressure, Reid, lbs./sq. in.	9.4
Gum Mg./100 c.c. (copper dish):	
Without inhibitor	10
With Universal inhibitor (0.025%)	3
Oxygen bomb stability induction period, minutes:	
Without inhibitor	180
With Universal inhibitor (0.025%)	365
Octane No.:	
Research method	82
Motor method	75

100 c.c. A.S.T.M. Distillation

	°F.
Initial B.P.	88

(Continued on Next Page)

[1]Petroleum Development and Technology, Vol. 103, p. 397 (1933).
[2]Petroleum Development and Technology, Vol. 107, p. 396 (1934).
[3]Petroleum Times, July 21, p. 87 (1934).

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Distilled over, per cent:	
5	135
10	167
20	224
50	289
90	366
Endpoint	397

Upon examination of the properties of this gasoline it is interesting to note that if a colored product is desirable, no further treatment is necessary except sweetening and the addition of a dye, as the use of the Universal inhibitor gives a gasoline of low gum content and high oxygen bomb stability.

(b)—Treated Cracked Gasoline

In order to produce a gasoline of 30 color, the untreated gasoline was refined with 1 pound of 93 per cent sulphuric acid, neutralized with caustic soda and distilled with fire and steam. It was necessary to add 0.025 per cent by weight of Universal inhibitor in order to meet market specifications, as to oxygen bomb stability. The properties of the treated gasoline are given below:

Treatment—	93% sulphuric acid
Acid, lbs./bbl.	1

Treating losses—	Pct. of gasoline
Acid solution	0.4
Polymerization	0.0
Distillation	1.3
Total	1.7

Analysis of Treated Cracked Gasoline

Gravity, °A.P.I.	48.2
Color, °Saybolt	30
Color after exposure to carbon arc	26
Doctor test	Neg.
Oxygen bomb stability induction period, minutes:	
Without inhibitor	125
With Universal inhibitor (0.025%)	620
Octane No., motor method	74

100 c.c. A.S.T.M. Distillation

	°F.
Initial B.P.	125
Distilled over, per cent:	
5	131
10	170
20	213
50	280
90	351
Endpoint, °F.	383
Per cent over	97.0
Per cent bottoms	1.5
Per cent loss	1.5

The gasoline above meets all market specifications for water white product.

(c)—Residuum

Below is given the distillation of the cracked residuum removed from the bottom of the fractionating column during run No. 3.

100 c.c. A.S.T.M. Distillation

Gravity, °A.P.I.	9.8
Initial B.P., °F.	368
5%	442
10	464
20	496
50	580
90	713
Per cent over	87.0
Per cent coke by weight	13.2
Per cent at 460° F.	2.0
Per cent at 572° F.	47.5

(d)—Cracked Gas

The gas produced when cracking naphtha from Persian crude was analyzed and had the following properties:

GOCKEL ABSORPTION ANALYSIS

	% by vol.
Paraffins	72.3
Ethylene	5.4
Propylene and higher olefins	18.2
Hydrogen	2.6
CO_2, CO, O_2, N_2	1.0

PODBIELNIAK DISTILLATION

Pentanes, per cent	4.3
Pentanes, gals./1,000 cu. ft. gas	1.55

The topped crude which represented 62.3 per cent of the Persian crude oil was subjected to cracking operation. The properties of this oil are shown as follows:

PROPERTIES OF TOPPED CRUDE OIL

Gravity, °A.P.I.	26.4
Flash (Cleveland open cup), °F.	220
Fire (Cleveland open cup), °F.	250
Flash (Pensky-Martens), °F.	140
Viscosity Furol at 77° F., Sec.	20
Sulphur, per cent	1.46
Cold test, °F.	45
B.s. and w., per cent	0.2

Engler 100 c.c. Distillation

Initial B.P., °F.	322
Distilled over, per cent:	
5	480
10	493
20	544
30	582
40	635
50	688
60	728
70	730
Per cent over by volume	96.0
Per cent coke by weight	4.2
Per cent at 400° F.	2.0
Per cent at 437° F.	3.5
Per cent at 572° F.	27.5

Cracking Topped Crude

The pilot plant used for cracking Persian topped crude consisted of two separately controlled heating coils, single reaction chamber, flash chamber, fractionating tower, condensers, receivers, pumps and instruments for the precise control of temperatures and pressure. In the operation, the topped crude charging stock, together with the heavy reflux from the fractionating tower, passes through the "heavy oil coil" while a lighter fraction obtained as a side cut from the fractionating column is processed in the "light oil coil." The hydrocarbon mixture from both furnaces passes to a common reaction chamber held at the same pressure as the "heavy oil coil." The hydrocarbon mixture then flows to a flash chamber operating under reduced pressure. In the flash chamber, vapors are separated from the residuum, which is continuously withdrawn. The vapors pass to the fractionating column and are separated into gasoline vapors and reflux condensates which are returned to the light and heavy heating coils.

In the operation of the unit during the two runs reported, the pressure at the "heavy oil coil" outlet and the reaction chamber was held at 200 pounds per square inch. The pressure on the light oil coil was 400 pounds. The transfer temperature on the light oil coil was 975° F. during both runs, while the temperature at the outlet of the heavy oil coil was held at 935° F. The results of these runs are shown as follows:

SUMMARY OF CRACKED PRODUCT YIELDS
(Based on the Topped Crude Charging Stock)

	% by vol.
Gasoline	53.8
Residuum	28.9
Gas and loss	17.3
Gas, cu. ft./bbl. of topped crude	726

PROPERTIES OF PRODUCTS PRODUCED FROM CRACKING PERSIAN TOPPED CRUDE

(a) Untreated Cracked Gasoline

Gravity, °A.P.I.	60.9
Color, °Saybolt	17
Gum, Mg./100 c.c. (copper dish):	
Without inhibitor	31
With Universal inhibitor (0.025% by weight)	4
Sulphur, per cent	0.14
Peroxide No.	0.13
Vapor pressure, Reid, lbs./sq. in.	11.1
Oxygen bomb stability, induction period, minutes:	
Without inhibitor	150
With Universal inhibitor (0.025% by weight)	245
Octane No. (Research method)	80
Octane No. (Motor method)	71

100 c.c. A.S.T.M. Distillation

Initial, B.P., °F.	95
Distilled over, per cent:	
5	118
10	132
30	160
50	234
90	326
Endpoint	388

If a colored gasoline is desired the untreated gasoline may be marketed direct after sweetening, inhibiting, and dyeing.

Treated Cracked Gasoline

If a water white gasoline is desired it is necessary to treat the gasoline. The cracked gasoline was treated by agitation with 2 pounds of 93 per cent sulphuric acid per barrel of charge. The gasoline after neutralizing with caustic soda was rerun with fire and steam. The product from the rerun still was then sweetened by treatment with 3 per cent of 8° Baume plumbite. In order to have a high induction period it was necessary to add 0.025 per cent by weight of Universal inhibitor to the treated product. The analysis of the treated gasoline is given as follows:

Treatment—	(*)
Acid, lbs./bbl.	2

*93% sulphuric acid; 3% 8° Be. plumbite.

Treating losses, % of gasoline—	%
Acid solution	1.1
Polymerization	0.5
Distillation	0.3
Total	1.9

Analysis of Treated Cracked Gasoline

Gravity, °A.P.I.	61.6
Color, °Saybolt	27
Color after exposure to carbon arc	20
Doctor test	Neg.
Sulphur, per cent	0.09
Gum, Mg./100 c.c. (copper dish):	
Without inhibitor	5
Oxygen bomb stability, induction period, minutes:	
Without inhibitor	55
With Universal inhibitor (0.025%)	410
Octane No., Motor method	70

100 c.c. A.S.T.M. Distillation

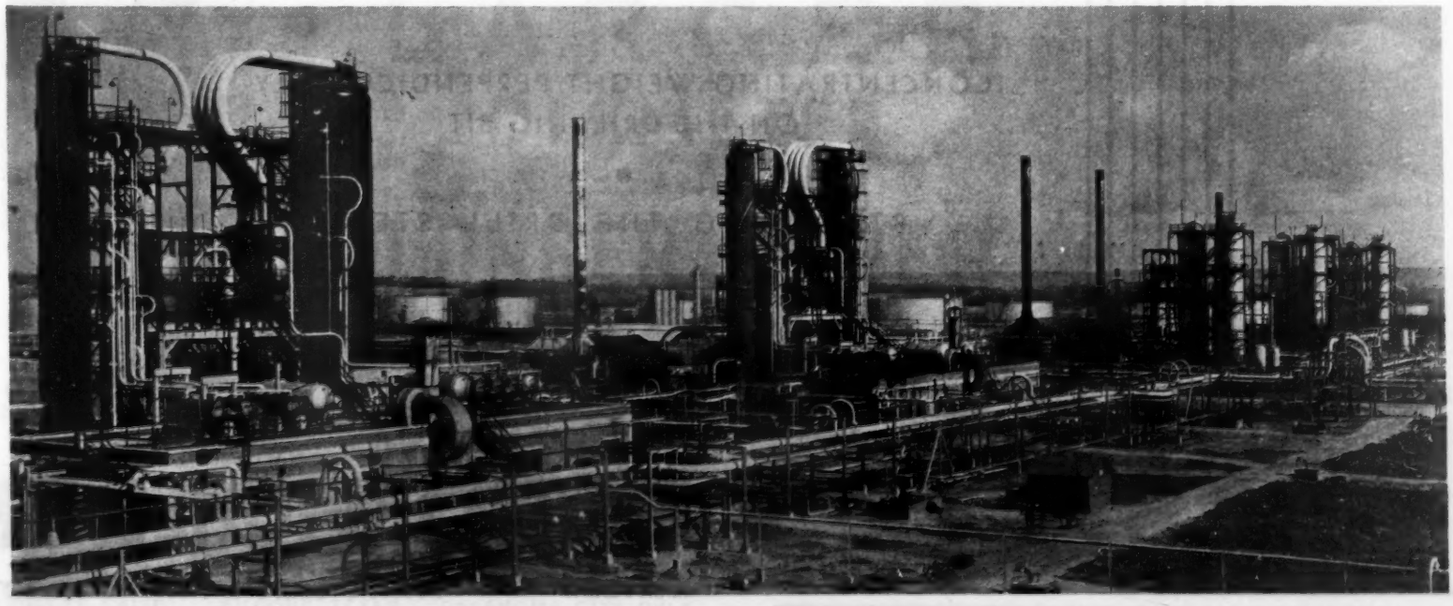
Initial B.P., °F.	105
Distilled over, per cent:	
5	127
10	140
20	165
50	234
90	321
Endpoint	371
Per cent over	97.0
Per cent bottoms	1.5
Per cent loss	1.5

The above results show that gasoline of satisfactory characteristics may be obtained from the raw cracked products by treatment with sulphuric acid and plumbite. It is interesting to note the marked effectiveness of the Universal inhibitor in increasing the oxygen bomb stability of the treated gasoline.

(c) Cracked Residuum

The cracking operation was so conducted as to produce a heavy residuum. This product was analyzed and had the properties shown as follows:

Gravity, °A.P.I.	1.2
Flash (Cleveland open cup), °F.	280
Fire (Cleveland open cup), °F.	320
Flash (Pensky-Martens), °F.	175
Vis. S. Furol at 122° F., Sec.	1,170
Cold test, °F.	60
B.s. and w., per cent	0.2
Initial B.P., °F.	439
Per cent at 572° F.	6.0



General view of crude stills and cracking equipment at the Port Jerome, France, refinery of the Standard Franco-Americaine de Raffinage

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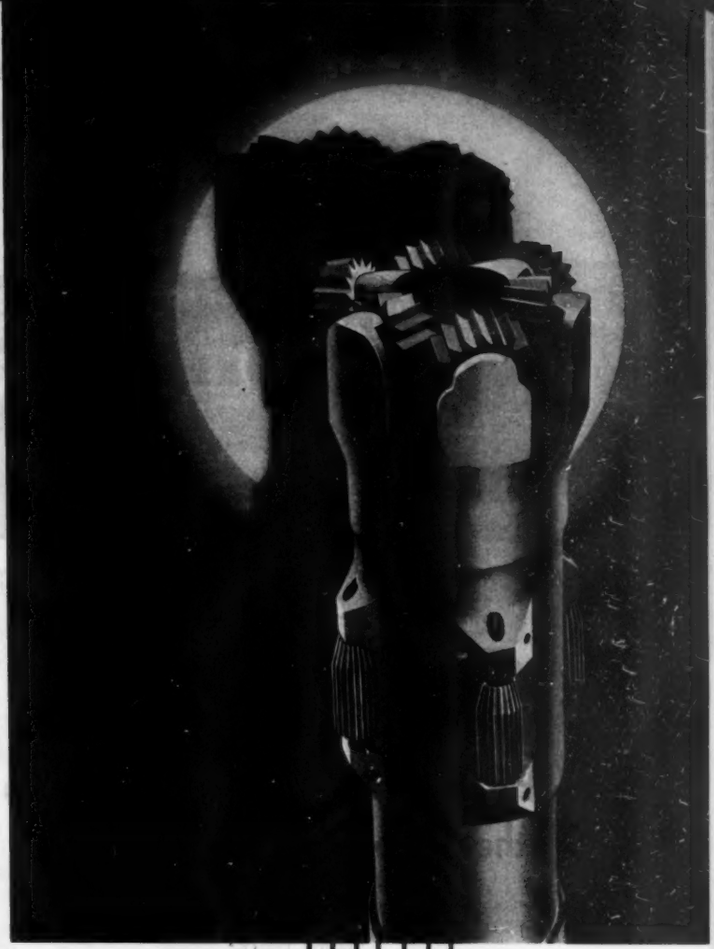

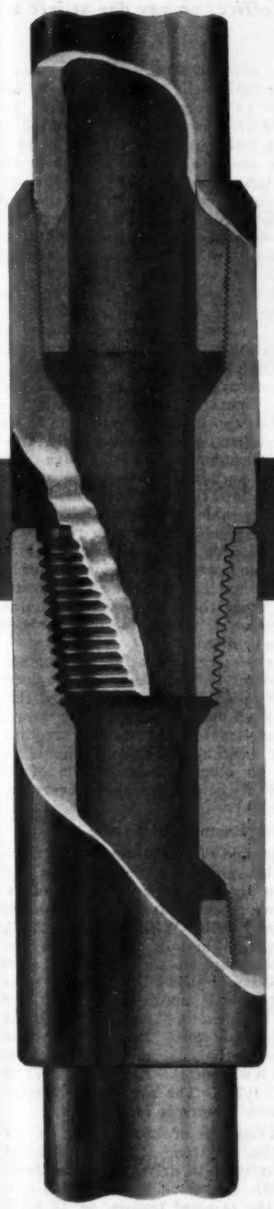

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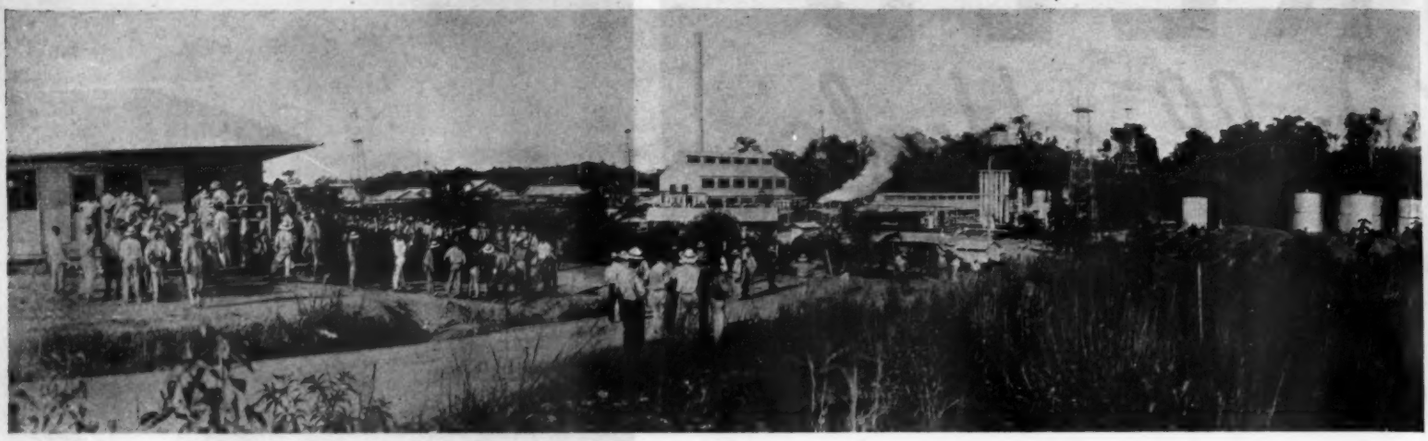


View of part of the industrial area at El Centro, Colombia of the Tropical Oil Co. Power plant is shown in center; general offices on pay day at left and natural gasoline plant to right of center

COLOMBIA

Some Phases of Power Application by the Tropical Oil Company

By J. D. WOODBURY
Tropical Oil Co.*

At Barranca-Bermeja, the river port for the property of the Tropical Oil Co., are located the refinery, main tank farm, marine headquarters for the river fleet, material depot and railway terminal. The present producing field is located on two structures, known as Infantas and La Cira. Infantas structure is approximately 11 kilometers long and ranges from 1 kilometer wide at the south end to 3 kilometers wide at the northern end. La Cira structure is approximately 7 kilometers long and 3 kilometers wide, extending north from about 2 kilometers north and west of the northern part of Infantas structure.

El Centro, the operating center, is located near the northern end of the Infantas structure and is 26 kilometers from Barranca-Bermeja by rail. There are located railway terminal, warehouses, industrial shops, central power plant, main gas plant, pipe line field terminal pump station and storage tanks, administration offices, field hospital and foreign staff quarters for the field operating force.

Power Plant

The power plant has a normal operating capacity of 5,000 Kw. with standby capacity of 3,000 Kw. The main generating unit is a General Electric 5,000 Kw. 0.8 P.F., 2,300-volt, three-phase, 60-cycle, 3,600 R.P.M., condensing, steam turbo-generator, and the standby units are three General Electric 1,000 Kw. 0.8 P.F., 2,300-volt three-phase, 60-cycle, 3,600 R.P.M., noncondensing, steam turbo-generators.

Primary current distribution to the section of the Infantas structure north of El Centro, and for 3 kilometers south of El Centro, is at 2,300 volts. Primary current distribution to the southern part of the Infantas structure and all of the La Cira structure is at 13,200 volts through power transformer banks located at the El Centro power plant.

Two main 13,200-volt feeders supply each structure and are arranged for looping at the ends and midpoints of their sections to facilitate sectionalizing for maintenance and repair work. One of the 13,200-volt feeders through La Cira continues on to Barranca-Bermeja, where another 1,000-Kw. standby generating unit, of the same type as the 1,000-Kw. units in El Centro, is located. The average load of 350 Kw. in Barranca-Bermeja is normally carried by the El Centro plant over this line and the Barranca generator left for standby service.

Local secondary current distribution throughout the field is at 440 volts from field transformer stations, which are located so as to provide service areas of approximately 1 square kilometer for each. Capacities of these stations range from 50 Kva. to 225 Kva. (all three-phase) dependent upon the number of wells and gathering pump stations located in their service areas.

While electrification has been extensively applied to most of the operations in the field, the greatest general application has been in well pumping and gathering station service. All well pumping equipment is electrically driven and since this service constitutes about 35 per cent of the load carried by the power plant at present and is expected to eventually total 50 per cent of the plant load, it is at once the most important and most interesting item for study of its applications.

Pumping Equipment

When the first well pumping motors were bought for the field, the pumping equipment on hand was the "standard-front" adaption of cable tool drilling rig equipment, with silent chain speed reduction units to couple the motors to the band-wheel drives. The only electric motors commercially available and classed as "oil-well pumping motors" were the dual-rated, wound-rotor motors intended for the double purpose of pumping and cleaning out the wells. The size selected for use in this field was rated 35/15 horsepower.

The wells drilled up to that date were from 1,200 to 2,000 feet deep, and the service obtained with the number of these dual-rated pumping motors was considered satisfactory. When production was opened up on some of the shallower sands encountered, however, this equipment proved too bulky and expensive to merit consideration, so a number of small pumping "jacks" with deadweight counterbalances were procured.

The locations where these pumping "jacks" were installed then required portable hoisting equipment for pulling rods and servicing the wells. This service was at first rendered by gasoline-engine driven tractor hoists. Increasing demand for the grade of oil obtained from the shallow wells brought more of the pumping "jacks" into service, and their eventual comparison with the "standard-front" units on the deeper wells.

A number of larger jacks were then brought in for trial on some of the deeper wells, and electric motor driven hoists were mounted permanently on trucks for servicing the wells where they were installed. The motors for the hoists are of wound-rotor type and are rated 40 horsepower at 1,200 R.P.M. Over-all results obtained from this combination led the trend away from the "standard-front" arrangements until no more equipment for them was purchased, and the truck-mounted hoists even began to do the servicing at the wells where the "standard-fronts" were installed.

At present date, the well pumping equipment in the field is comprised of standard-front units and several sizes of jacks of both the deadweight and rotating counterbalance types. When the majority of these units were purchased, the motors obtained to drive them were of sufficient size to handle the maximum output requirement of the units.

During 1932, when increasing motor applications at wells and in portable well servicing equipment began to be a dominant factor in effect and requirement on the distribution system, a survey of representative pumping equipment showed such a low average power requirement in proportion to sizes of motors in use and such variance in requirement for different pumping conditions (i.e., pumping speed, length of stroke, fluid level in well, etc.) that a more thorough study of these applications to determine the power-saving possibilities was undertaken.

With the well servicing being done by the portable hoist equipment, the indication was obvious that much greater overall efficiency could be obtained by applying a driving motor at each well, of such size and type that would give the best load-factor while still providing sufficient torque to start up the pumping unit without danger of stalling. At the time the current consumption tests were started for the purpose of comparing the motor applications among the various types of pumping equipment, 263 units were in operation; consuming a total of 1,057 Kw., or an average of 4.018 Kw. per well. The units at that time were equipped with the motors supplied for handling their maximum output requirement.

During a period in 1933, while approximately the same wells held an even operating and production schedule, by interchanging smaller motors from pumping units not required under the production schedule, with some of the larger motors in over-powered applications on working units, the total power consumption for 267 wells was reduced to 926 Kw., or an average of 3.468 Kw. per well. With the increasing number of pumping units in operation during 1934, bringing nearly all of the previously displaced, larger motors back into other applications where their full capacities were not required, the pumping well power consumption reached a total of 1,396 Kw. for 352 wells, or an average of 3.965 Kw. per well.

While an average Kw. per well figure alone is a very arbitrary factor to use for comparing total efficiencies of limited numbers of pumping units, among a large number it does furnish an interesting comparison with the average production figure when total production changes in approximate proportion to the number of wells. When both the total power consumption and average Kw. per well continued to increase out of proportion to the oil pumped, it was deemed advisable to purchase a sufficient number of smaller motors to replace all motors working at poor load-factor in the pumping well applications in order to save as much as possible of the wasted current from the over-powered applications and make it available for operating additional units.

Representative tests before the replacements began indicated an average load-factor of less than 50 per cent, and that by applying motors with proper torque characteristics for the starting requirement in each application, it should be possible to obtain a load-factor of 75 per cent or better in nearly every instance.

Example of Saving

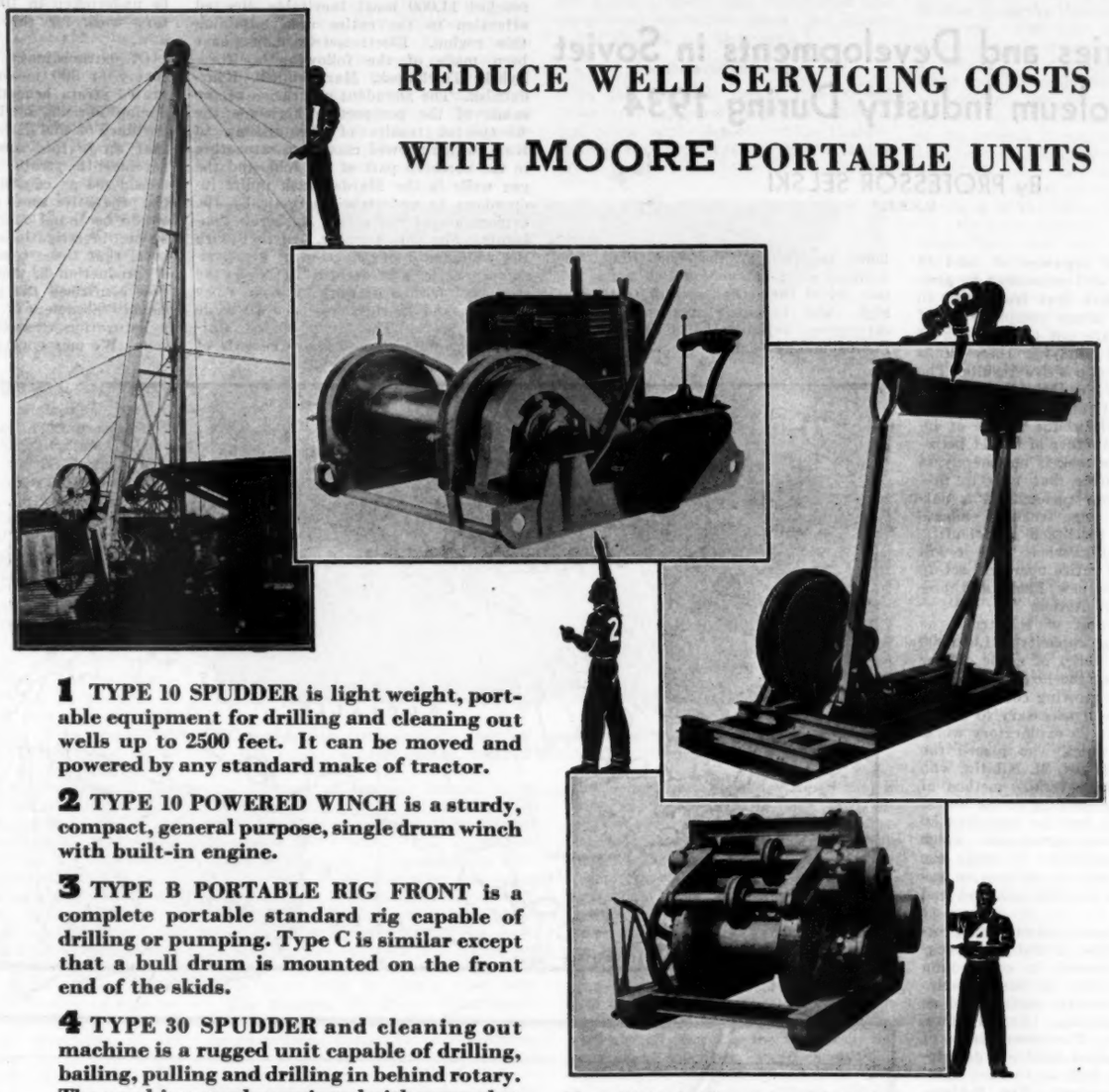
An example of the power saving to be gained through such replacements is contained in the following summary of results from recent changes in a group of 26 pumping wells. With a total of 225½ horsepower in motors at the wells, the power consumption was 59.7 Kw., and 105.08 Kva., at 0.568 P.F. The average load-factor was approximately 32 per cent. These motors were replaced by others totaling 89½ horsepower which consume, for the same production, a total of 55.25 Kw., but the Kva. is now 71.45 and P.F. 0.773. The average load-factor for the new motors is 74 per cent.

The difference of 33.63 Kva. on the distribution system leaves sufficient power available to drive eight additional units with the same average load and P.F. as the original motors, or 12 additional units with the same average load and P.F. as the new motors.

To provide convenient service for both the pumping units and portable servicing equipment, we have developed service boxes which are installed on the line poles serving the wells. Each service box contains a fusible main switch or air circuit-breaker, a magnetic contactor with overload relay and push-button control for the pump motor, a lighting circuit switch for the well lights, and a plug receptacle for the power supply cables of the portable well servicing equipment.

*Superintendent, Electrical Department.

REDUCE WELL SERVICING COSTS WITH MOORE PORTABLE UNITS



1 TYPE 10 SPUDDER is light weight, portable equipment for drilling and cleaning out wells up to 2500 feet. It can be moved and powered by any standard make of tractor.

2 TYPE 10 POWERED WINCH is a sturdy, compact, general purpose, single drum winch with built-in engine.

3 TYPE B PORTABLE RIG FRONT is a complete portable standard rig capable of drilling or pumping. Type C is similar except that a bull drum is mounted on the front end of the skids.

4 TYPE 30 SPUDDER and cleaning out machine is a rugged unit capable of drilling, bailing, pulling and drilling in behind rotary. The machine may be equipped with a sprocket to drive a light rotary table.

Type 31 is similar except it has a power unit mounted on the same skids.

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U. S. S. R.

Discoveries and Developments in Soviet Petroleum Industry During 1934

By PROFESSOR SELSKI
U.S.S.R.*

There are vast expanses of land in the Soviet Union still untouched by geologists, and the fact that from year to year larger and larger complements of young geologists are put to the work of investigating and studying these lands cannot but lead to positive results. The entire territory of the U.S.S.R., with the exception of the Central European part and Siberia, is within the sphere of influence of one or another of the 11 petroleum trusts, whose task is not merely to exploit the oil fields, but also to prepare and study new regions. It is natural that each of these trusts is endeavoring to create for itself a scientific technical organization whose duty it will be to improve the entire operative set-up and to investigate new fields and prepare them for exploitation.

Azneft, the largest of the trusts as regards producing capacity—21,000,000 tons (147,000,000 bbls.) of crude oil per year—naturally has the largest scientific organization. The growing complexity of its work has made it necessary to create a separate unit for its exploratory work, at the head of which was placed the talented young geologist, M. Nikitin, who introduced the "snizu-verkh" method of production drilling (drilling to the lowest strata first). This year he organized 56 geological-geophysical expeditions which were sent into Azerbaijan to study the oil-bearing lands, and in addition he has set up a complete detailed technical and geological service.

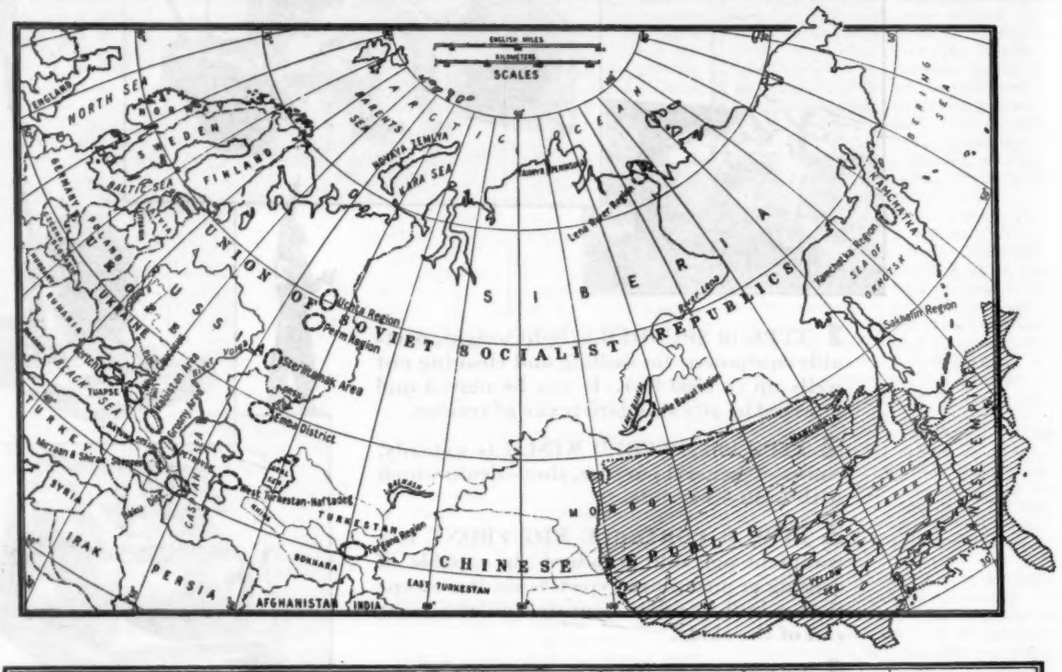
Instead of prolonged and expensive coring in drilling wells, careful electro-logging is now performed, in conjunction with miscroscopic study of slush samples both as to their mineral content and as to the micro-organisms (Foraminifera, etc.) they contain. The cross-section of the hole thus obtained carries a description of the rocks, both as to their mineral and fauna content. The Schlumberger method of logging was used and gives an indication not only of the oil content of the various horizons penetrated, but also their porosity and to some extent the technical condition of the hole. By comparing and studying such cross-sections a clear picture is obtained of the underground structure and of the latent economic possibilities. The advanced scientific set-up which geologist Nikitin has achieved in the geological service not only decreases the risks, but also affords an exhaustive answer in the shortest possible time to the question concerning the value of each location studied. This has been of enormous service and a great achievement. Electro-logging and microscopic study of the elements of each location drilled have now been made obligatory throughout the U.S.S.R.

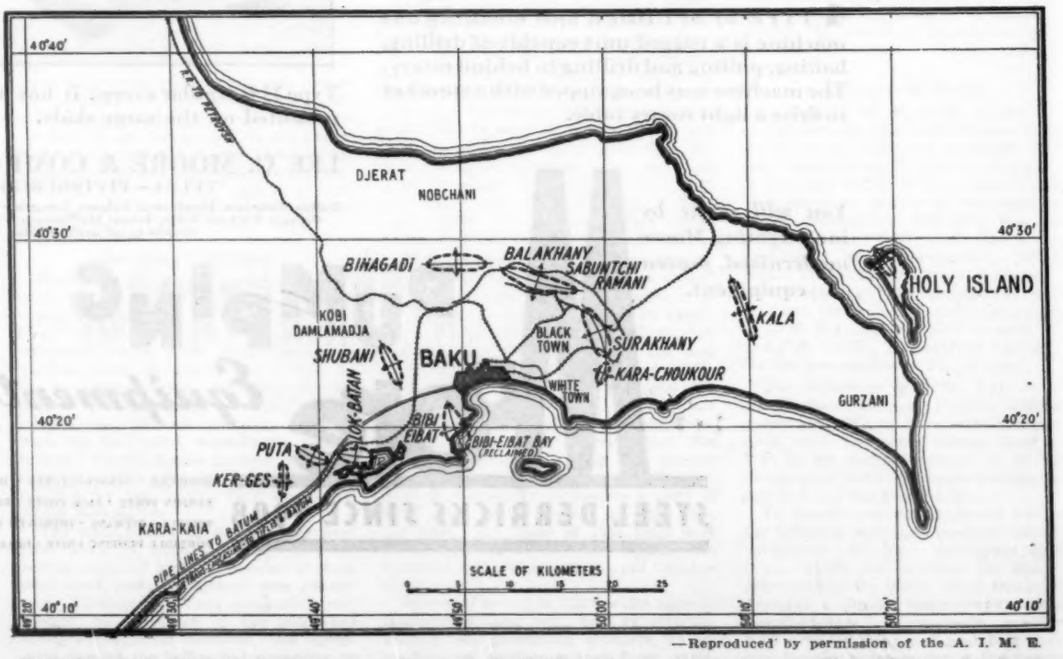
Aliat Range

The exploratory work of the current year has succeeded in establishing the great value of the entire Aliat range. By electrical and magnetic measurements the Pirsagat, Biandovan and Hidyrlov folds were mapped. Immediately thereafter the drilling of deep holes was started, and they should be completed very soon. A study of the logs of these holes testifies to the fact that "the horizons of the Aspheron Peninsula" retain all of their fundamental features—high yield, lithologic structure and oil saturation—beyond the limits of the Peninsula. As soon as the wells will be completed a huge new area will go into production.

The geological work concentrated in the Gadjinsk region and in the areas adjacent to Georgia has disclosed extensive series of favorable structures which will be explored by deep drilling shortly. The exceptional results of the drilling on the Kala anticline (average daily production reached 11,000 tons) inevitably directed attention to the entire area adjoining this region. Electrometric maps have been made of the following uplifts—Zyhsk, Tiurkiansk, Mardakiansk, Kiurdahalsk. The abundant saturation of the sands of the prospective horizons, the unexpected results of the drilling in Kala, which showed maximum saturation in the northern part of the fold, and the gas wells in the Mardakiansk uplift induced us to undertake energetically the exploration of the entire Apsheron Peninsula. For this purpose, together with the widespread introduction of geophysical work, it was decided to cover the peninsula with a network of exploratory wildcats, and 15 rigs have been set aside for this work. The study of the Mardakiansk uplift showed that the axis of the fold extends into the sea. For the study of the sea bottom electrometric and gravimetric work was started and a series of new uplifts have been charted for the first time, extending far into the sea, and giving a well rounded picture of the Artem Island fold and of the coastal area. The deep exploratory drilling of the coastal area in the sea will be undertaken in 1935 and the preparatory work for this is being conducted now.

Of extraordinary interest is the discovery at 300 meters depth of oil saturated strata beneath the sixteenth producing horizon in Bibi-Eibat. The importance of this discovery lies in the fact that up to this time the sixteenth and seventeenth strata of Bibi-Eibat were considered as constituting the bottom of the productive zones and that below these would be found marine deposits. Microscopic investigations have shown, however, that these zones are not the limit of production in depth, and drilling has now confirmed the presence of an additional 300 meters of producing zone with a saturation exceeding the upper horizons. We may consider it possible, there-





—Reproduced by permission of the A. I. M. E.

Oil fields of the U. S. S. R. Upper map shows all the fields with superimposed map of United States showing comparative areas. Lower map shows oil fields of Apsheron Peninsula, Caucasus. Maps republished from Transactions A. I. M. E. (1934) 108 Petroleum Development and Technology

*Prepared especially for this issue of The Oil and Gas Journal through courtesy of G. V. Ackerman of the Amtorg Trading Corp.

fore, that Bibi-Eibat is almost completely rediscovered.

Lok-Batan Field

The exceptional potentials of the Lok-Batan gushers have induced very careful exploration of the entire expanse covered by the deposits of the mud volcano. It turned out that the crater occupies a very limited area and that the fold continues further without any faults towards a union with the neighboring Putinsky fold. This discovery enormously increases the workable area of the Lok-Batan Field.

Considerable progress has been made in the speed of drilling, which in certain instances, in producing wells, reached 800 meters per month, thereby approaching the speeds attained in the United States. In addition there is considerable improvement in technique—the inventor of the turbo-drill, Engineer Kapeliushnikov, has presented to the industry a new invention in the form of a novel, exceptionally convenient control and regulation of the rotary rig, which considerably increases its efficiency.

Molgabek Field

Grozneft this year has started developments in the new Molgabek Field. This is in a previously uninhabited part of the country. Grozneft has already erected a village of 4,000 inhabitants, a narrow gauge railroad and 50 derricks. The structure of the fold itself turned out to be very much more complicated than appeared at first, since not only the eastern part but also the western part seem to have been separated by a thrust retaining the oil-bearing sands in a sealed condition.

Careful investigation this year showed the presence of a thrust in the western part of the Novo-Grozny region and from the underthrust limb a powerful gusher has been brought in. In the Staro-Grozny region, well No. 24/40 came in with a flow of 200 tons per day from the underthrust limb. This opens very wide perspectives since in the old region (Staro-Grozny) the entire northern section the fold is covered over and concealed by a thrust for a distance of 60 kilometers. At the eastern end of the Benoisk fold a second gusher was struck with a flow of 400 tons of light crude per day, which confirmed the high value of the Benoisk Field, and especially the importance of the Maikop formation, which is now being explored in the old producing fields. Of great significance also is the gas struck in one of the wells in Eldarovo on the anticlinal of the Tersk ridge, and the finding of high resistance by the Schlumberger method, which indicates oil saturation in the Spaniodont formation in the well drilled in the village of Novo-Krestiansk in the Zaterechnaia plain.

Maineft succeeded in establishing definitely the direction of the branch-like sand lens which proceeds in a wide channel to the northwest to join the Hadyjansk Pool. The wells drilled in this direction came in with high flush production and an enormous gas pressure (500 to 800 tons of crude per day at a pressure of 1,050 pounds per square inch). The wells in Hadyjansk extending to the southeast increased their production so that there is not excluded the possibility that beneath the present producing horizon a zone correlated with that of the Apsheron region will be found.

South Iskine Region

Emba has put the South Iskine region into production and from the beginning crude oil of exceptionally high quality was received in the zone of contact of the sedimentary rocks with the salt formations. The well flows 250 tons (1,750 bbls.) of crude oil a day. In Koschagyl no results have yet been achieved because the railroad has not been completed, and without this, normal work is impossible in these regions. Geological and geophysical work this year has disclosed several score salt domes (the work still continues), and detailed study of the character of the salt formations by the reflection method of seismograph work has begun, together with detailed torsion balance work. The entire expanse between the Ural and Volga Rivers proves to be studded with salt domes and the latest information received from the Ukrainian Academy of Science shows that an area of salt formations exists in the Ukraine between the steppes of Poltava and Romna. Detailed study of these areas will be begun next year.

The Eastern Oil Trust (Vostokneft) has completed the 160 kilometers of wide-gauge railroad from Ufa to Ishimbaevo, which was started a year ago, and systematic exploitation of the Ishimbaevo Field difficulties were encountered because the oil-bearing limestones of the Artinsk and Carboniferous areas were covered over with an extensive thickness of sediments of the Kungur age with its folding distinct from the deformation of the underlying strata. The geophysical picture up to recently has not been very clear because the dense horizon overlying the producing depths acted as a screen against gravimetric, seismographic and electrometric investigations. At present, however, a gravimetric picture has been successfully obtained showing not only the exact character of the unconformity but also the underlying structure of the petroliferous horizons. Well No. 725, placed in the gravimetric high, came in at a rate of 1,000 tons (7,000 bbls.) of crude per day with a casing pressure of 330 pounds per square inch. The thickness of the producing limestones reaches 200 meters. Their wide distribution and exceptional saturation place the Ishimbaevo Field in the first rank.

Samarsk Region

In the Samarsk region four drilled holes have disclosed a series of oil-bearing strata in the deposits of the Carboniferous era; preparatory work is going on in two of these holes for the purpose of proving these horizons and if the results are favorable, an enormous oil-bearing area will be indicated, because the wells are distributed over 80 kilometers. Northward, near the city of Perm, two oil fields have been discovered, one at Levshino, 20 kilometers north of Perm and the other 40 kilometers south of Perm in the territory of the Paper Combine. The oil at Levshino is found in the Kungur and Carboniferous strata, the oil at the Paper Combine in the Kungur deposits. The discovery of oil in these places in conjunction with the oil found in the Chusovsky villages has enormous significance. Notwithstanding the large number of wells drilled in the Chusovsky villages (60) the tectonics of this area remains in doubt and the localization of oil in one uplift was difficult to explain. The finding of oil in Levshino, and more especially the discovery on the territory of the Paper Combine, enabled Geologist N. Gerosimov to offer a new theory of the formation of oil, placing it now in horizons of Kungur age. The wide application of geological and geophysical work, together with wildcat drilling, will make it possible to give accurate answers to many of the questions of tectonics, as well as of the economic value of the new discoveries.

Motor driven compressors used in the manufacture of natural gasoline at Ordjonikidze, near Baku, Azerbaijan, U.S.S.R.

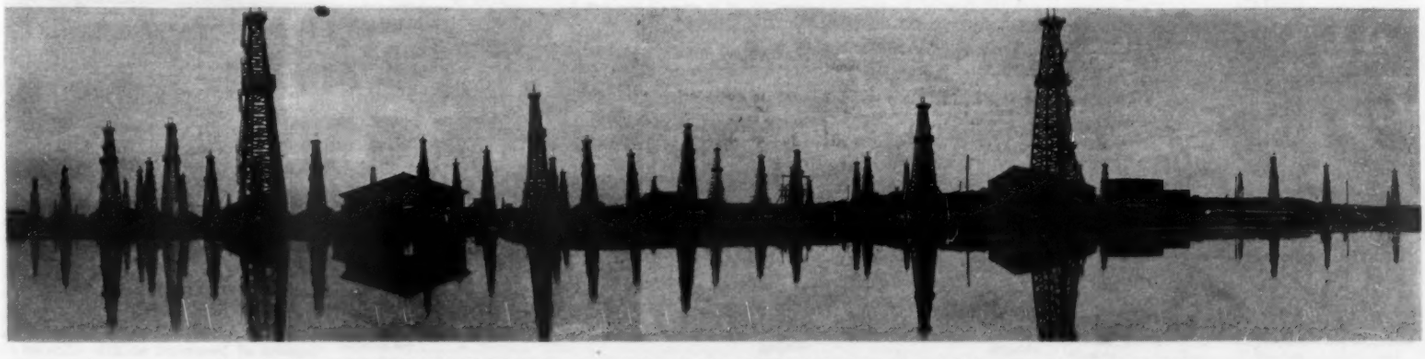
Central Asia

In Central Asia, Geologist Tuaev has mapped the Haudag fold. A well drilled in the central part of this fold at a depth of 174 meters came in making 200 tons (1,400 bbls.) a day of flush production from the limestones of the Paleocene age. The fold extends about 12 kilometers, irregularly, with branches. In addition to the important fact that large and favorable folds are present in this region, this discovery has especial significance for Central Asia because up to the present it was considered that oil in Central Asia existed only in the so-called Fergan strata of the Eocene period, from which oil is at present being produced in the fields of the Fergan Valley. On account of the new discovery this supposition must now be abandoned and the presence of oil in the underlying zones is established. Furthermore, in the Taurdag region oil seepages were found from the deposits of the Ursk age, as well as in Tashkent from the deposits of the Paleozoic age. The abundance of folds (at present more than 60 are known) and evidences of oil, together with the presence of oil in the strata beginning with the Tertiary and ending in the Paleozoic, justify quite a new outlook for Central Asia as regards the presence of oil in this region.

It is necessary to mention also that geological-geophysical expeditions have been dispatched this year into Kamchatka, where a series of very promising formations have been found with accompanying evidences of oil; also into the northern Lena basin and to the mouth of the Hatanga and to Nova Zembla Island. The attention which the Soviet Union is giving to the problem of the north in general does not permit us to be indifferent to any of the existing information about evidences of oil distributed in these far places, and necessitates the further exploration of that region.

Geophysical Equipment

We have also obtained great success in construction of geophysical equipment. The Leningrad plant "Geosnab" is making almost all forms of geophysical apparatus, many of which have already undergone almost a year's active service. For such devices as torsion balances, magnetometers, potentiometers, seismographs and oscillographs, new and original forms of construction were worked out and models were made which gave fully satisfactory results. Our theoretical work in connection with the solution of problems, both in the field of geology and in the field of geophysics, is known to specialists in these fields abroad. From the pens of such men as Numerov, Bruman, Fredericks, Gamburtzev, Sokolov, Arkhangelsky, Gubkin and others, valuable papers appear every year, which simplify the processes of both production and application and especially of interpretive technique. Actually we have only begun research work on a wide scale, and the favorable results which we already have secured serve as a full guarantee that the extraordinary riches hidden underground will soon yield to our endeavors.



View of the Azizbekov oil field (Ordjonikidze district), one of the active drilling areas in the U.S.S.R.

TARIFFS and TAXES

Manufacturers, Exporters, Are Directly Concerned in Reciprocal Negotiations

By GEORGE F. BAUER
Manager, Export Department,
Automobile Manufacturers Association

There is considerable similarity between the experience of American automobile manufacturers in expanding their sales in foreign countries and the problems that have to be met by producers of gasoline in their efforts to enlarge overseas outlets for their products. In both instances, the consumer's price is the determining sales factor whether the product be an automobile or gasoline and regardless of whether the market be the United States or some distant land.

From their domestic experience, automobile manufacturers, for instance, have come to know that the real source for mass buying is the 40,000,000 Americans who have incomes of $2,000 or less.

Mass purchasing power, therefore, centers around people who can become mass buyers only as products are brought within their financial reach. Since the ratio between the poorer and the middle or richer classes is so startling as regards the United States, there is no doubt that similar situations also exist in other countries of the world.

To build up an increasing export business for automobiles, it has been necessary to see that the costs are more and more reduced with a view toward bringing this modern form of transportation within the reach of the greater masses of people. How many automobiles the nationals of any country will buy consequently depends on the cost of cars to them.

Similarly it may be said that the consumption of gasoline will vary in accordance with the price that is charged not so much by the producer but rather what is to be paid as result of tariffs and taxes by the ultimate customer in any land. If the price has to be loaded because of these imposts, it is quite natural that substitutes for gasoline will be sought or that engineering practices will be changed in order to effect as great an economy as possible in this item of operating the automobile.

In other words, a commodity, regardless of what it may be, will be sold in big quantities only as it is placed within the buying reach of the biggest number of people. A low-priced car quite naturally will sell in much bigger quantities than an exceedingly high priced one, as the number of potential buyers for the first is enormously larger than in the latter case.

Consumer Price Angle

The importance of this consumer price angle is evidenced both as regards cars and gasoline. If more people are placed in a position to obtain cars they do proceed to do so and to operate them. If gasoline is reasonably priced from the viewpoint of the ultimate customer, more extensive trips and consequently larger consumption of fuel are encouraged. It would be misleading to feel that the producer alone determines the price at which his product can be delivered to the final buyer abroad. The producer may set a reasonable price as regards himself, but if any excessive tariffs and taxes are applied against the product it will nevertheless be necessary to boost the charge accordingly for the ultimate user.

In Rome, for instance, gasoline is reported to sell at 62.4 cents a gallon. The tax alone amounts to 37.9 cents. In addition, there are many indirect taxes and regulations which tend to increase the cost of doing business. All of these items have to be added in and tend to cause the need for the high retail price that prevails there.

With such an adverse consumer's price situation, it is quite natural that car construction should be artificially pushed in the direction that will bring about reduced gasoline consumption per car. Manufacturers in European countries where similar situations exist consequently strive to emphasize economy in gasoline consumption rather than maximum performance for each unit of cost of operation. Car development is consequently restricted in compliance with an artificial tariff or tax situation rather than with the needs of man throughout the world for an efficient medium of transportation.

Owners of the cars are also forced to keep use down to a minimum in view of the very high costs involved in running them.

Reciprocal Trade Negotiations

In view of these identical factors which definitely determine the volume of sales overseas by American automobile manufacturers and gasoline producers, interest is warranted by both groups in the efforts being made by our Government to bring down tariff and tax costs through the medium of reciprocal trade negotiations. The automobile industry has already availed itself of this facility and Robert C. Graham, as chairman of the Export Committee of the Automobile Manufacturers Association, has presented the motor phases deserving consideration in each country with which negotiations have been announced.

In other words, he has pointed out the relationship of tariffs and taxes as they affect the consumer's price in a particular country and consequently influence mass sales of automobiles. To provide for most accurate studies of the problems involved in each situation, a special committee to aid Mr. Graham was appointed by the Automobile Manufacturers Association and include such men as Edgar W. Smith, vice president of General Motors Export Co.; H. P. Stewart, assistant sales manager, Chrysler Export Corp., and B. C. Budd, vice president of Packard Motors Export Co., as well as Norman Damon, who is connected with the Washington office of the association. These men were chosen because of their special knowledge of the technical details incidental to these export problems.

Thirteen nations have already started reciprocal negotiations with the United States. A treaty with Cuba has already been concluded, hearings have been finished on 12 of the countries and December 12 was the final date for the filing of briefs in the case of Switzerland. While not yet officially announced, there are reports to the effect that Italy, Finland, Mexico and one or two others may be similarly approached in the near future.

The preliminary work is undertaken by Secretary of State Hull in co-operation with a Reciprocal Trade Information Committee that comprises representatives of all of the departments concerned with foreign trade expansion. Invitations have been generally announced through this governmental body and the submittal of briefs has been asked from all interested groups. The arrangement offers an excellent chance to have the tariff and tax cost factors properly studied in efforts to bring about more reasonable adjustments in the consumers' prices abroad for all kinds of American products. Gasoline is one commodity that excellently fits into this class and warrants attention if motor transportation in foreign lands is to be brought to its full developments along proper lines.

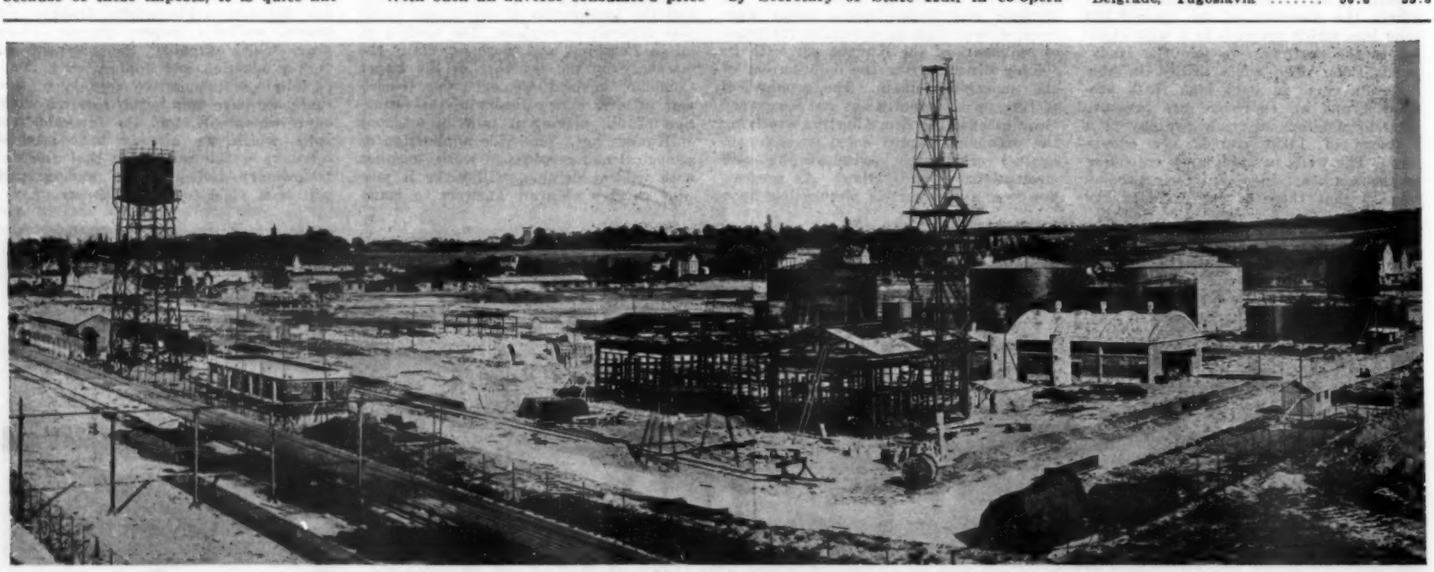
Manufacturers and exporters of oil field, refining and marketing equipment in the United States are also directly concerned in the possibilities of these reciprocal negotiations.

The automobile exporters, while concerning themselves only with the tariff factor as it pertained to motor vehicles, are quite naturally interested in factors effecting also the cost of operating cars abroad. The price of gasoline, if unduly enhanced as result of foreign tariff or tax situation, has a bearing on the sales outlets for American cars that have been designed with a view to efficient performance and not solely to effect economy of gasoline consumption.

It would appear that anything done by the American gasoline producers collectively to assure the preparation of suitable briefs for each reciprocal tariff hearing as it is announced by the Department of State would be helpful in expanding quantity sales not only of American gasoline abroad but of American motor vehicles that have been especially designed to operate on a reasonably priced motor fuel.

(Excerpts from report of Petroleum Section, Bureau of Foreign and Domestic Commerce.) Prices in cents per gallon.

City and country—	Gasoline price	Tax
Algiers, Algeria	42.0	11 5
Buenos Aires, Argentina	29 6	5 6
Vienna, Austria	33.1	15 3
St. Michaels, Azores	54.1	14 6
Santiago, Chile	30.5	8.7
Bogota, Colombia	27 0	6 0
Prague, Czechoslovakia	43.2	13 3
Cairo, Egypt	32 4	11 5
Paris, France	58.6	27.6
Guatemala City, Guatemala	39 0	9.0
Port-au-Prince, Haiti	35.0	5 0
Tegucigalpa, Honduras	45 0	14 6
Budapest, Hungary	35.0	20.0
Rome, Italy	62.4	37.9
Casablanca, Morocco	33 7	6.6
Batavia, Java	64.8	25.7
Curacao, Netherland W. Indies	28.6	7.5
Wellington, New Zealand	41.0	9.0
Managua, Nicaragua	38 0	5.0
Oslo, Norway	25.7	9.6
Manila, Philippine Islands	30 5	7.6
Warsaw, Poland	61.0	14 0
Bucharest, Rumania	24.8	22.0
Stockholm, Sweden	27.5	9.8
Beirut, Syria	40 5	19 3
Istanbul, Turkey	80 7	19.5
Belgrade, Yugoslavia	56.8	33.3



Dubbs cracking unit under course of construction in France

UNITED KINGDOM

New Consumption Record of Petroleum Products Established During the Year

The United Kingdom established a new record in the consumption of petroleum products in 1934 based on data covering the first 10 months of this year. With its own production of crude petroleum and shale oil of no consequence in the total requirements of petroleum products, the data on imports minus exports give an accurate check on consumption when considered over a period of several months or a year. For the first 10 months of 1934 the government's reports show that the importation of crude oil and refinery products totaled 2,285,459,000 Imperial gallons and 2,057,044,000 gallons for the same period in 1933. Subtracting the 88,779,000 Imperial gallon exports for 1934 and 80,154,000 gallons for 1933, and the indicated consumption for the first 10 months of 1934 was 2,196,680,000 gallons, a gain 11.1 per cent over the 1,976,890,000 gallons for the same period in 1933.

NEW LUBRICATING OIL PLANT

Work will start early in 1935 on the construction of a 1,000-bbl. lubricating oil plant at East Halton, Lincolnshire, England, for Herbert Green & Co., Ltd. Contract for the construction of the plant has been let to The Lummus Co., New York City.

The refinery will have complete facilities for the manufacture of lubricating oils, including a Duo-Sol plant and contact and filtration plants. The Duo-Sol plant is licensed by Max B. Miller & Co., Inc., New York.

Expressed in the American barrels, the consumption of all products in the United Kingdom for the 10-month periods were 206,500 bbls. daily for 1934 and 185,800 bbls. daily in 1933. The imports this year have shown a consistent increase from month to month over last year with indications that continued gains will materialize in 1935 over 1934.

The imports for the 10-month periods, as shown by government reports, are as follows (data in Imperial gallons):

	1934	1933
Crude oil	400,303,000	323,974,000
Gasoline	946,407,000	935,761,000
Kerosene	182,336,000	144,021,000
Lubricating oil	89,077,000	89,362,000
Gas oil	113,409,000	90,160,000
Fuel oil	534,498,000	461,023,000
Miscellaneous oils	18,429,000	12,743
Total	2,285,459,000	2,057,044,000

Refinery Operations Gain

Refinery operators in Great Britain increased their refinery operations over the past year, but their added output was not as great as the gain in consumption. The crude runs to stills for the two periods under comparison increased from 30,450 bbls. in 1933 to 37,670 bbls. for 1934. It is predicted that these crude runs to stills will be increased to around 50,000 bbls. daily by the middle of 1935. This fall the Lobitos Oilfields, Ltd., placed its new refinery in operation at Ellesmere Port, England. A small topping plant is to be built at Haulbowline, Ireland, by the Cork Harbour Oil Wharves, Ltd. At least two of the refineries already operating in England have recently increased their crude oil capacity.

The fact that only 37,670 bbls. of crude oil daily are refined at plants in the United Kingdom out of a total domestic requirement in excess of over 200,000 bbls. for all petroleum products is indicative of the minor position of domestic refining facilities in the country with the largest consumption of petroleum products in Europe. Due to the fact there has been some agitation in Great Britain that the government, through the necessary legislation, promote a domestic refining industry to encourage companies distributing in the United Kingdom to build refineries to furnish these requirements. This plan was inaugurated in France four years ago and several refineries have been built as a result. Italy now proposes to follow in part the French plan. So far no definite action has been taken in the United Kingdom.

Domestic Supplies

The government is seeking in two ways to increase the domestic supplies of petroleum products. Last summer a new law was passed which it is hoped will stimulate interest in developing possible crude oil production in Great Britain. All petroleum rights have been taken over by the government which has perfected a licensing system for private operations. Considerable geological work has been carried on in Great Britain over the past 25 years but no systematic drilling program has ever been carried on to determine the commercial possibilities of oil production except at a few scattered points. It is anticipated that considerable exploratory drilling with more geological surveys will take place during 1935 as a result of the new government

The other plan, based on the production of synthetic products, is made possible through the British hydrocarbon oil product act which became a law in 1933. This law guarantees preference to hydrocarbon oils manufactured from indigenous coal, shale or peat. The preference represents the difference between the rate of customs duty on imported oil and any excise duty payable on home produced oil.

As a result of this law the Imperial Chemical Industries, Ltd., is building a hydrogenation plant at Billingham, England. This plant, which represents an expenditure of $12,000,000, will be operating on a capacity basis of 700,000 bbls. of hydrocarbon oil yearly early in 1935.

Sources of Supply

So far as crude oil is concerned, the Anglo-Persian Oil Co., Ltd., continues to furnish approximately 50 per cent of the supplies imported into the United Kingdim. This crude is refined at the refineries of subsidiary companies. The remainder of the crude oil comes from Netherland West Indies, East Indies, Trinidad, Rumania, U.S.S.R., Mexico and the United States. The crude oil imports from Mexico have shown a substantial increase this year, while those of the United States have decreased.

As to refinery products, the position of the Netherlands West Indies has been greatly strengthened as a supplier of products consumed in the United Kingdom. Subsidiaries of the Royal Dutch-Shell and the Standard Oil Co. of New Jersey depend on their affiliated West Indies refineries for a large part of the gasoline and fuel oil marketed in the United Kingdom by their companies. In regard to kerosene and lubricating oils, the United State continues to hold first place in imports with a large increase in the case of kerosene during 1934.

The following tables give the imports into the United Kingdom for the principal countries for the first 10 months of 1934 and 1933 (data in Imperial gallons):

ALL PETROLEUM PRODUCTS

	1934	1933
Neth. West Indies	710,038,000	625,774,000
Persia	503,247,000	467,845,000
United States	286,777,000	293,628,000
Rumania	155,744,000	158,156,000
Mexico	144,989,000	118,397,000
Russian	57,696,000	65,390,000
East Indies	46,678,000	36,632,000
Br. West Indies	28,006,000	31,941,000
Venezuela	3,060,000	17,065,000
Other countries	349,225,000	242,216,000
Total	2,285,459,000	2,057,044,000

GASOLINE

	1934	1933
Neth. West Indies	389,109,000	356,209,000
Persia	199,871,000	184,806,000
United States	110,343,000	150,034,000
Mexico	49,991,000	40,344,000
East Indies	46,678,000	36,632,000
Rumania	41,449,000	80,375,000
Russia	26,922,000	38,186,000

KEROSENE

	1934	1933
United States	61,804,000	39,459,000
Persia	44,788,000	37,078,000
Rumania	26,799,000	35,706,000
Mexico	13,973,000	8,542,000
Russia	5,677,000	3,847,000

LUBRICATING OIL

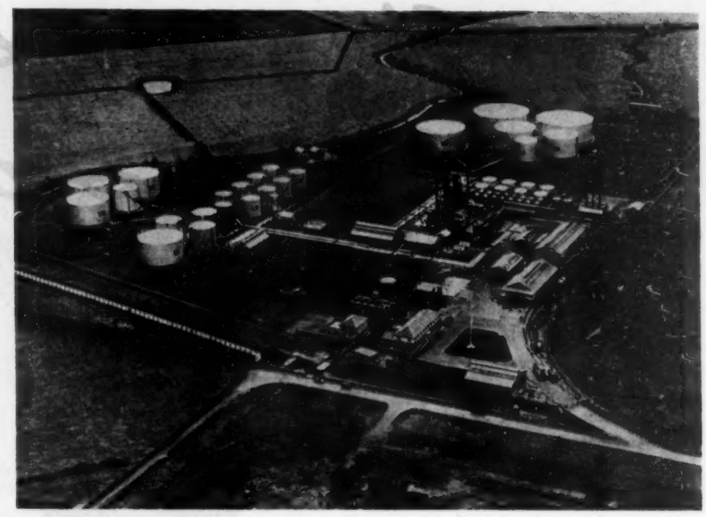
	1934	1933
United States	51,932,000	60,186,000
Russia	18,790,000	11,527,000
Mexico	8,091,000	9,507,000
Germany	2,255,000	1,791,000
Belgium	740,000	337,000

GAS OIL

	1934	1933
United States	49,133,000	25,804,000
Rumania	36,108,000	33,631,000
Neth. West Indies	9,132,000	10,767,000
Russia	3,567,000	3,315,000

FUEL OIL

	1934	1933
Neth. West Indies	296,680,000	254,377,000
Persia	70,970,000	61,118,000
Mexico	67,934,000	60,004,000
Rumania	41,383,000	8,444,000
Br. West Indies	28,006,000	31,941,000
United States	2,740,000	3,515,000



Recently completed refinery of the Lobitos Oilfields, Ltd., at Ellesmere Port, England

Crude Oil Production in Colombia and Peru Shows Substantial Increases

Both Colombia and Peru have shown substantial increases in crude oil production this year over 1933. The available figures covering 10 months' operations show that Colombian production from January 1 to October 31, 1934, totaled 14,152,898 bbls., or 46,550 bbls. daily, a gain of 27 per cent over the 11,162,783 bbls., or 36,700 bbls. daily for the same period in 1933.

In the case of Peru the production for the first 10 months of this year totaled 11,723,886 bbls., or 38,560 bbls. daily. This was an increase of almost 30 per cent over the 9,029,291-bbl. total, or 30,000 bbls. daily for the first 10 months of 1933. The following table gives the production by months for the two countries; (data in barrels):

	Colombia		Peru	
	1934	1933	1934	1933
January	1,188,540	796,907	1,012,780	1,005,436
February	1,041,658	647,573	903,471	1,035,417
March	1,086,827	773,274	1,017,147	1,218,790
April	1,037,127	818,359	1,193,736	1,093,533
May	1,085,192	912,864	1,730,095	1,169,233
June	1,187,030	907,863	1,683,691	1,113,328
July	1,233,804	1,055,727	1,646,739	1,189,655
August	1,300,253	1,110,959	1,691,314	1,164,104
September	1,259,901	1,035,338	1,627,632	1,085,885
October	1,303,554	970,427	1,646,293	1,087,397
November		998,066		999,253
December		1,178,994		996,605
Ten months	11,723,886	9,029,291	14,152,899	11,162,783

These are Great days for Good tools

There never has been a time when good oil tools—tools that justify their purchase by giving an *extra* measure of dependable service—have been more in demand by successful operators. Oil men everywhere want to make every dollar they spend for equipment go as far as possible, and they buy the tools that will do the most work efficiently, that will last longer, and will cost the least to maintain in working condition.

Baker has been in the oil tool business for more than twenty-seven years, always making the highest quality, thoroughly field-tested, practical tools. Every oil man knows, however, that Baker equipment *is* new, and is constantly *kept* new, by being developed to meet modern conditions—to embody the newest practical ideas in design—and to take advantage of advancement in metallurgy and manufacturing processes.

Baker is aware that thousands of wells, ranging in depth from 1,000 to 10,000 feet, will be drilled in 1935—both by cable tools and rotary—in oil fields all over the world. Wherever drilling is done many Baker tools will be used. Operators using them know that the same Baker from whom they bought Baker Tools years ago is still in business today. They know they can readily secure repair and replacement parts and that their equipment will continue to give them dependable, safe, efficient and economical service.

Baker Tools are field tested under all conditions. For repairing old wells or preparing new ones for the introduction of casing there are Baker units to help you. You can depend on their safety and efficiency, secure in the knowledge that thousands of operators have successfully done so before you. And when it comes to landing a string of casing quickly and safely—the experienced oil man naturally thinks of Baker Cement Equipment.

1. *Baker Cement Float Shoe*

2. *Baker Cement Float Collar*

3. *Baker Cement Whirler Shoe*

5. *Baker Cement Guide Casing Shoe*

1. *Baker Cement Float Shoe*

4. *Baker Whirler Cementing Collar*

Baker Tools are Practical

1. BAKER CEMENT FLOAT SHOE

A special Guiding, Floating and Cementing shoe having the guide, internal plug and back pressure valve mechanism constructed only of concrete and a minimum amount of Bakelite. It has strength beyond the collapsing strength of the casing for safety. It contains a buoyant Bakelite ball valve which will float in mud fluid, and upon the slightest back pressure forms a tight seal against the rubber ring recessed in the Bakelite valve seat.

The non-metallic construction insures ease in drilling out and complete disposal. The hole is always left free from any objectionable fragments which might obstruct subsequent drilling, coring, or completion of the well.

Baker Tools are Dependable

2. BAKER CEMENT FLOAT COLLAR

A special floating and cementing collar, or coupling, in which only concrete and a minimum amount of Bakelite are used in constructing the internal plug and back pressure valve mechanism. Many operators prefer to place the principal "float valve" in a collar one or two joints above bottom. The cementing plug used in cementing is thus stopped at the collar; the cement tailings are retained in the casing; and cement of a better consistency is distributed around the casing shoe. This Float Collar has all the floating and cementing efficiency of the Baker Float Shoe.

In deep wells, two cement float collars and a cement guide shoe are often used. However, the combination of a cement float collar and cement float shoe is more generally employed.

Baker Tools are Safe

3. BAKER CEMENT WHIRLER SHOE

A cementing shoe, which also serves the purpose of a casing guide and float. It is identical in design to the Baker Cement Float Shoe, except that a number of side circulation holes lead out from the valve chamber below the valve seat, in addition to the bottom circulation hole.

These holes, or ports, are "baffled" by means of plates set in grooves, which are cut at an upward angle. The greater outlet area, and the manner in which the fluid is diverted and directed around the shoe, insure complete distribution of cement, and minimize "channelling."

In the event that a long heavy string of casing is set on bottom and cannot be raised safely, the side ports afford ample circulation which would not otherwise be available.

Baker Tools are Practical

4. BAKER WHIRLER CEMENTING COLLAR

Placed in the string between screen pipe and casing, this unit provides the most efficient means of cementing a combination string, or cementing at any depth. The internal plug and double-valve mechanism are constructed entirely of concrete and Bakelite. Side circulation holes, like those in the Cement Whirler Shoe, direct the cement upward around the casing. The basket acts as an outside packer to keep the cement away from the oil sand and to catch any cavings which help in packing off.

Baker Tools are Dependable

5. BAKER CEMENT GUIDE CASING SHOE

A plain Texas Pattern (Straight Side) Casing Shoe, is equipped with a Guide made of special formula

concrete which is amply strong—provides minimum shrinkage, and yet is not so hard that it cannot be drilled up readily and circulated out of the hole with the drilling fluid.

The advantages of a "drillable" material for the construction of the shoe guide (over materials formerly used) are obvious: The hole is left free and clear of any objectionable material which might otherwise obstruct or endanger further drilling and coring operations.

Baker Tools are Safe

6. BAKER CABLE TOOL CORE BARREL

A core drill for use with standard cable tools. The inner core-retaining tube rests on the formation on the bottom of the hole, while the longer outer drill barrel drills the formation to full gage of hole.

Fluid enters the outer barrel on the upstroke through ports and a valve. The valves in both the drill barrel head and the core-retaining tube head close on the downstroke, thus producing a hydraulic effect. The fluid passes between the inner and outer barrel, and out into the formation through the drill shoe. Very efficient.

6. *Baker Cable Tool Core Barrel*

7. *Bakwik Drill Pipe Float*

9. *Baker Rotary Core Barrel*

Baker Tools are Practical

7. BAKER BAKWIK DRILL PIPE FLOATS

The Baker Bakwik Drill Pipe Float Valve provides many advantages, such as relieving weight on derrick, rig equipment, lines, brakes; minimizing damage which might result in case of a parted drilling string and preventing the plugging of drilling bits. This special joint, which is placed between rotary tool joints, contains a back-pressure valve assembly fitted within the body and held in place by the tool joint pin, without the use of threads or any interconnecting members. The valve assembly can, therefore, be removed and replaced quickly and easily without tools—a feature of great practical importance. It is made to fit both Standard A.P.I. and Full Hole tool joints.

Baker Tools are Dependable

8. BAKER CEMENT RETAINER (AND CIRCULATION JAR)

This perfected device provides an efficient means for cementing through tubing under pressure. It is easily run on tubing or drill pipe (usually in conjunction with the Baker Circulation Jar) and can be set at any desired point in the casing. It packs off in the casing to provide a tight seal against the highest pressures, so that cement may be pumped through the tubing and out into the formation without danger of having the cement pass between the tubing and casing.

8. *Baker Cement Retainer*

11. *Baker Pattern Casing Shoe*

10. *Baker Rotary Wall Scraper*

Baker Tools are Safe

9. BAKER ROTARY CORE BARREL

More perfect cores, a greater percentage of core recovery and the ability to cut a full-gage hole are outstanding features of the Baker Rotary Core Barrel. The Inner, or core-retaining tube, is suspended by a ball-bearing swivel and remains stationary with the core while the drilling barrel revolves. Cores cannot be burned, ground up or distorted. The stationary inner barrel permits the use of a sturdier Trap Ring or core catcher, assuring a higher percentage of recovery. There are three sets of teeth on the Drill Shoe, one to cut the core, one to cut the hole to gage and the other set to maintain full gage, make hole more rapidly in hard formations and help reduce coring cost.

Baker Tools are Practical

10. BAKER ROTARY HYDRAULIC EXPANSION WALL SCRAPER

This hydraulically operated underreamer is capable of great expansion and performs many operations previously considered impossible or unsafe. The scraper blades are expanded by pump pressure and cut their way out to horizontal position while the string is being rotated. The blades are held in an expanded position by the shoulder formed in the formation. Circulation is maintained throughout the scraping operation.

Many advantages accrue from the use of the Baker Wall Scraper, such as scraping the oil sand of its sheath of mud and accumulated debris to bring in the well easier, and increase the area of productive oil sand—providing proper clearance for liners—scraping formations before cementing—providing a free annular space surrounding the shoe joint—securing a better bonding surface for the cement.

Baker Tools are Dependable

11. BAKER PATTERN CASING SHOE

This Casing Shoe is used in cable tool drilled wells. The chisel teeth around the bottom of the casing shoe serve to cut off a portion of the wall of the hole so that the casing will follow freely.

High quality special steel, correct heat treatment and careful construction of the Baker Pattern Casing Shoe are necessary to secure high efficiency and exacting performance. Extremely close tolerance specifications are followed for exterior taper, dimensions and spacing of cutting teeth.

All Baker Oil Tools are described in the 1935 Composite Catalog, copy of which should soon be in your hands; or, if you prefer, ask for the complete, illustrated Bager Catalog—just off the press.

BAKER OIL TOOLS, INC.

POST OFFICE BOX 609, HUNTINGTON PARK, CALIF.

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IRAQ

Refining Value of Mesopotamian Crude and Quality of Its Products

By GUSTAV EGLOFF and EDWIN F. NELSON
Universal Oil Prodcts Co.

The oil, gas and bitumen of Palestine, Syria, Mesopotamia, and Persia have been known for thousands of years. Aristotle, writing about 360 B.C., stated that: "Inflammable petroleums rise in large quantities in the soil of Persia, in smaller quantities in Sicily, where they often have a distinct odor of cedar resin." Cox stated in 1932[1]: "Oil and gas in Iraq has been a matter of record for more than 5,000 years. The early Sumerians at Ur of the Chaldees used bitumen from the seepages. Seepages occur today throughout the mountain and foothill belts and west of the Euphrates near Hit. Small amounts of oil have been skimmed from many of these seepages and refined in a crude type of primitive still for an unknown period. During the World War the Germans, operating under the Berlin-Baghdad Railways concessions, drilled seven shallow wells at Quiyarah seepages near Mosul. None of these wells was drilled in to the 'main limestone,' made famous by the Maidan-i-Naftun Field in Persia, and none probably ever produced more than a few barrels of oil. The Germans did, however, refine small amounts of oil from the seepages in a battery of primitive batch stills supposed to have been built by the Turks.

"After the World War the Anglo-Persian Oil Co. operating in the Transferred Territories of Iraq, completed its first well (No. 6) into the thick marine limestone series ('main limestone') at Naft Khaneh. The Turkish Petroleum Co., Ltd. (renamed Iraq Petroleum Co. in June, 1929), commenced to operate its Iraq concession in 1925. After completing a geological survey drilling operations were begun on April 5, 1927, at Paikanah and soon afterwards in five other areas. On October 13, 1927, low-grade oil was discovered in the 'main limestone' at Quiyarah, west of the Tigris, and on the following day, October 14, the discovery well, No. 1 Baba Gurgur, of the now famous Kirkuk Field, came in.

Recent Discoveries

These three discoveries, within less than two years, by the two companies on three distinct structures in the foothills belt, spaced roughly 75 to 100 miles apart, mark the end of the new discoveries in Iraq to date. Oil at Qaiyarah occurs 700 to 1,100 feet below the surface, at Kirkuk 1,250 to 3,500 feet, and at Naft Khaneh 3,000 feet and deeper. In other structures of oil promise, which are as yet unproved, depths will range from a few hundred feet to depths beyond the present limit of the drill. Qaiyarah crude is similar in some respects to heavy Mexican crude. Kirkuk crude averages 35.7° A.P.I., has a mixed base, is sulphurous, and is, in many respects similar to Mid-Continent crudes of like gravity. Kirkuk and Qaiyarah wells flow under moderately low pressures (less than 200 pounds per square inch at casinghead), but Naft Khaneh wells flow under as high a pressure as 1,800 pounds per square inch at casinghead.

Up to December 31, 1931, the Iraq Petroleum Co. had drilled tests in 10 different areas and had discovered one commercial field. Most of the Iraq Petroleum Co.'s operations outside of Kirkuk and Qaiyarah have met with an unprecedented combination of mechanical drilling difficulties, including extremely high fluid pressures. One well had a reported water flow above objective of 125,000 bbls. per day, with a flowing pressure of 1,300 pounds per square inch and a closed-in pressure, which momentarily rose about 2,500 pounds in pressure. Heaving, caving, squeezing, and in some cases clowing manjak, accompany and complicate the pressure flows. Formation movements of different types have caused a large percentage of junked holes. The difficulties are confined for the most part to the asymmetrical fold-faulted structures located in the southern areas.

[1]Petroleum Times, 28, 391 (1932).

Typical Analysis

A typical analysis of Iraq crude is shown in Table 1.

TABLE 1—ANALYSIS OF IRAQ CRUDE OIL

A.P.I. gravity	35.8
Sulphur, per cent	2.0
Gasoline, 395° E.P., per cent	26.8
Topped crude oil, per cent	71.2
Loss	2.0
Gasoline Properties	
A.P.I. gravity	64.0
Sulphur, per cent	0.08
Octane No.	50
A.S.T.M. 100 c.c. Distillation	
	°F.
Initial B.P.	96
Distilled over, per cent—	
10	160
20	185
30	205
40	230
50	245
60	260
70	280
80	300
90	320
Endpoint	375
Topped Crude Properties	
A.P.I. gravity	35.9
Sulphur, per cent	2.40
Cold test	Below 0° F.

Cracking Reduced Crude From Baba Gurgur Field

A reduced crude representing 55.7 per cent of the crude oil was available for cracking tests. This reduced crude had the following properties:

TABLE 2—ANALYSIS OF REDUCED CRUDE CRACKING STOCK

Gravity, °A.P.I.	19.9
Flash (Cleveland O.C.), °F.	310
Fire (Cleveland O.C.), °F.	345
Flash (Pensky-Martens), °F.	260
Visc. S. Furol at 122° F., Sec.	31
Sulphur, per cent	3.26
Cold test, per cent	60
B.s. and w., per cent	0.7
Engler 100 c.c. Distillation °F.	
Initial B.P.	496
Distilled over, per cent—	
5	564
10	589
20	639
30	670
40	685
50	696
60	705
70	717
80	729
Coke by weight, per cent	3.0
Distilled over at 572° F., per cent	6.5

Processing Method

In processing the reduced crude, recycle operation under Dubbs principles was used. In this operation the fuel oil is fed to the fractionating column. The preheated charge and the reflux condensate flow to the bottom of the tower from which the hot oil pump takes suction and discharges the mixture to the heating tubes. The hydrocarbons leaving the heating tube pass into the top of a reaction chamber which, during this operation, was held at 200 pounds pressure. All the hydrocarbon mixture is withdrawn from the bottom of this vessel and passes under reduced pressure to a flash chamber where a separation between liquid and vapors takes place. Cracked fuel oil is continuously withdrawn from the bottom of the flash chamber and the vapors pass to the fractionating column. Gasoline vapors are removed from the fractionating column, condensed and passed to storage while the heavier reflux condensate, together with the incoming raw charge, is returned to the furnace by the hot oil pump as described.

Two runs were made on the reduced crude at 200 pounds pressure and 935° to 945° F. transfer temperature. The cracking results are shown in Table 3.

Circular boats coated with bitumen on the Euphrates river

TABLE 3—CRACKING RESULTS ON REDUCED CRUDE

Operating Conditions		
Pressure, lbs./sq. in.	200	200
Temperature, °F.	935	945
Yields—Per Cent of Reduced Crude		
Gasoline	41.2	44.2
Residuum	50.5	43.8
Gas loss	8.3	12.0
Gas, cu. ft./bbl. Charging stock	462	554
Analysis of Cracked Products Untreated Gasoline		
Gravity, °A.P.I.	61.3	60.2
Color, °Saybolt	...	17
Gum, Mg./100 c.c. (copper dish):		
Without inhibitor	...	40
With U.O.P. inhibitor (0.01%)	...	12
Sulphur, per cent	...	0.31
Octane No., motor method	67	67
100 c.c. A.S.T.M. Distillation		
	°F.	°F.
Initial B.P.	89	94
Distilled over, %—		
5	119	127
10	136	144
20	168	175
25	210	214
50	246	251
90	339	346
Endpoint	377	382
Over, per cent	96.0	95.5
Bottoms, per cent	1.0	1.0
Loss, per cent	3.0	3.5
Cracked Fuel Oil		
Gravity, °A.P.I.	5.3	3.5
Flash (Cleveland O.C.), °F.	290	310
Fire (Cleveland O.C.), °F.	360	370
Flash (Pensky-Martens), °F.	160	195
Vis. S.F. at 122° F., Sec.	240	388
Cold test, °F.	40	45
B.s. and w., per cent	0.3	0.3
Initial B.P., °F.	464	468
Pct. distilled at 572° F.	6.0	8.0

These results indicate that gasoline yields of 41.2 per cent and 44.2 per cent may be produced from 19.9° A.P.I. Baba Gurgur reduced crude with the simultaneous production of cracked fuel oil approximately meeting Bunker C specifications. It is estimated that, when producing a cracked fuel oil having a Saybolt viscosity of 300 seconds at 122° F. or Bunker C specification, the gasoline yield would be 43 per cent by volume.

The untreated cracked distillate from run No. 2 was treated with 5 pounds of sulphuric acid per barrel and another sample with 15 pounds. The distillates were then neutralized with caustic soda and distilled with fire and steam at a maximum temperature of 350° F. The 15-pound acid treat was used to effect desulphurization.

Another type treatment was then resorted to. A light overhead distillate, 30 per cent by volume, was removed from the cracked gasoline and the bottoms acid treated and then distilled. The amount of acid used in treating the bottoms was 14 pounds per barrel which calculates 9.8 pounds per barrel of the original untreated cracked gasoline. The untreated overhead was then blended with the acid treated bottoms to produce a finished gasoline. The results of these treatments are shown in Table 4.

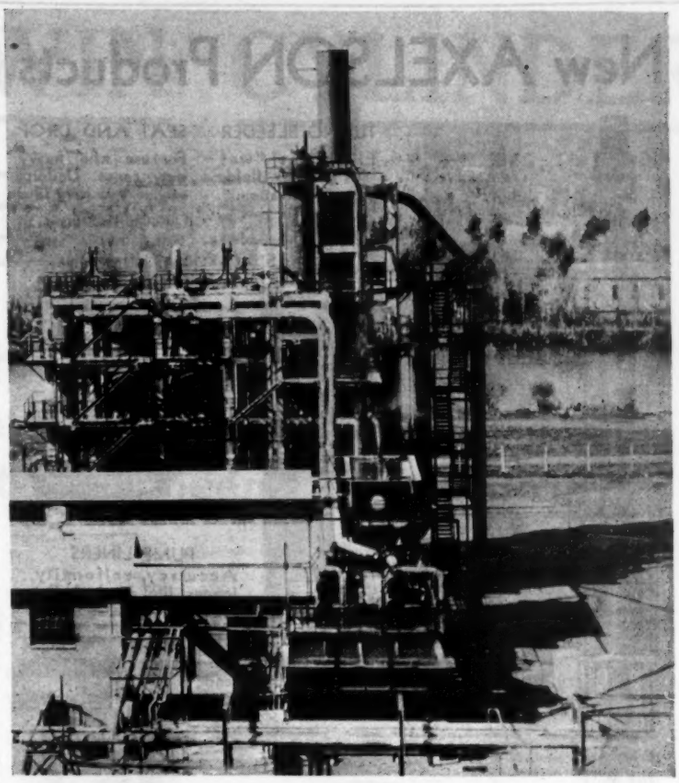
TABLE 4 — ANALYSIS OF TREATED CRACKED GASOLINE FROM IRAQ REDUCED CRUDE

	Acid	Acid	(*)
Acid, lbs./bbl. of gasoline	5	15	9.8
*30% untreated; 70% acid treated.			
	%	%	%
Acid solution, loss	2.7	3.5	3.0
Polymerization loss	1.4	2.4	1.8
Distillation loss	1.5	1.5	1.4
Total loss	5.6	7.4	6.2
Gravity, °A.P.I.	60.6	60.1	60.3
Color, °Saybolt	26	29	30
Color after exposure to arc lamp	19	25	...
Doctor test	Neg.	Neg.	Neg.
Gum, Mg./100 c.c. (copper dish):			
Without inhibitor	11	8	5
With U. O. P. inhibitor (0.025%) by weight of gasoline	5	5	2
Oxygen bomb stability—induction period minutes:			
Without inhibitor	60	120	55
With U. O. P. inhibitor (0.025%) by weight of gasoline	225	340	550
Sulphur, per cent	0.21	0.12	0.12
Octane No., Motor Method	65	64	64
100 c.c. A.S.T.M. Distillation			
	°F.	°F.	°F.
Initial B.P.	106	104	106
Distilled over, per cent:			
5	135	132	133
10	144	151	152
20	173	187	184
25	210	216	218
50	242	250	251
90	328	336	339
Endpoint	366	380	376
	%	%	%
Distilled over	97.0	98.0	96.0
Bottoms	1.0	1.0	1.0
Loss	2.0	1.0	3.0

The gasoline produced from reduced crude cracking may be acid treated with satisfactory desulphurization, but removal of an untreated light oil fraction and treatment of the bottoms effects the same desulphurization with a smaller quantity of sulphuric acid. The Universal inhibitor raises the induction period to marketable specifications.

CRACKING ABROAD

Modern Argentine and Canadian Units Processing Heavy Reduced Stocks



Combination cracking unit of Ultramar, Societa Anonyma, Petrolera Argentina at Buenos Aires, Argentina

In the expansion of refining facilities outside the United States during recent years, cracking has occupied an important place. The use of cracking in fact has increased proportionately more abroad than within the United States. On January 1, 1929, the yearly cracked gasoline production capacity outside the United States was about 7,500,000 bbls. and this had risen to 42,000,000 bbls. on January 1, 1934.

As a consequence of this recent activity, the cracking equipment now being operated abroad is predominantly of modern design. Little of it, either in actual amount or percentage, is of the early design of much still being operated in many refineries in the United Statts.

Type of Cracking

In the recent cracking installations abroad, crude supply and other economic factors have usually made advisable the processing of feed stocks to produce the maximum yield of high antiknock gasoline, and the minimum of residues. To accomplish this, refiners have resorted to the direct cracking of their topped crudes. The removal of early limitations to the cracking of residual and other heavy stocks has permitted much more flexbility in adapting the cracking processes to the needs of the refiners along this line. The cracking of residual oils has consequently met with much favor, both as independent operations and as parts of integrated combination systems. Price structures have recently been unfavorable to the production of coke and most of the operations are today producing fuel oil as the residual product.

Two units which embody a representative type of topped crude cracking operation are those recently built by the M. W. Kellogg Co. under license from Gasoline Products Co. for Ultramar S.A. in Buenos Aires, Argentina, and McColl-Frontenac Oil Co. in Montreal, Canada. The Ultramar installation employs the cracking as part of a 2,500-bbl./day combination unit, including the initial crude stripping. The McColl-Frontenac operation is a unitary one, cracking 4,000 bbls. a day of reduced crude produced elsewhere in the refinery. The process is understood to be especially adapted to economical small installations.

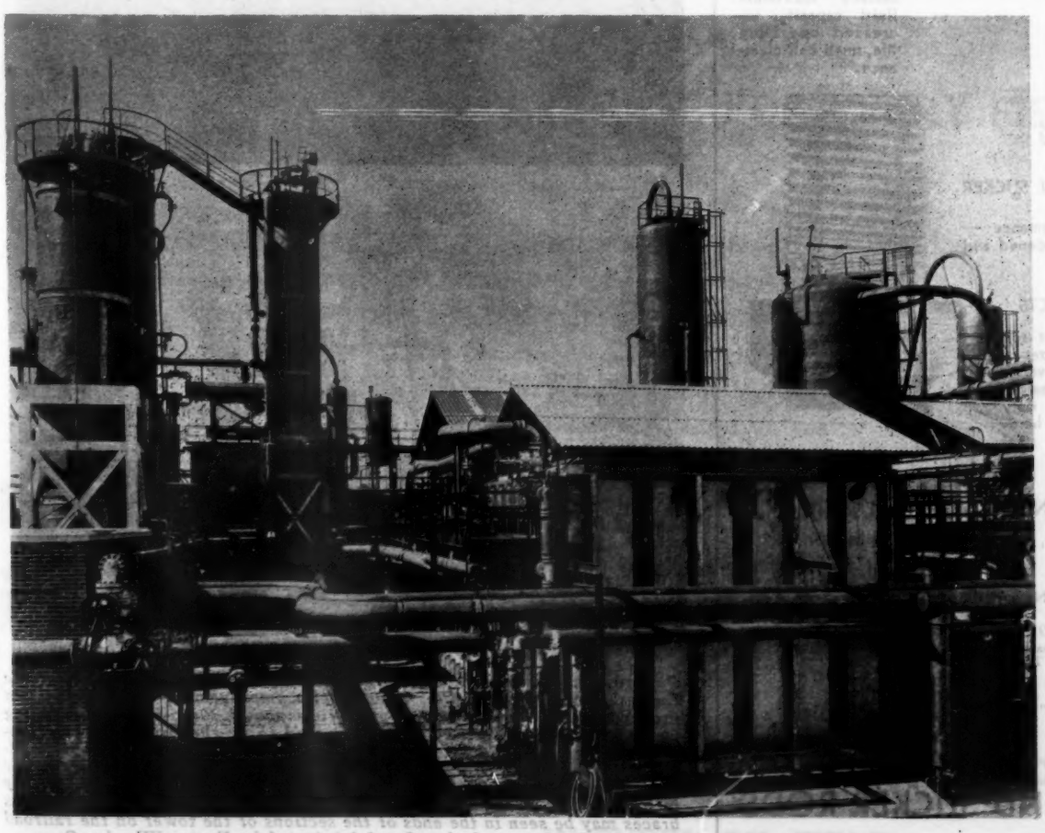
Cracking Heavier Stocks

The direct cracking of residual stocks to completion carries the same general requirements as other cracking with regard to yield, antiknock value of gasoline and efficiency of operation. On such stocks, however, increased importance attaches to the primary cracking or viscosity breaking of the heaviest feed constituents to augment the gas oil content and lower the viscosity of liquid residues or to even permit reducing residues completely to coke. The conducting of the main cracking operation on distillate gas oil derived from the feed stock has greatly facilitated the handling of residual charges and permits the high temperatures necessary for high antiknock values and economical cracking rates. The actual depth to which cracking of the liquid residual constituents is carried, however, is determined by the effectiveness of the viscosity breaking operation. The controlling variables have been the subject of considerable research out of which have grown distinct kinds of operations, one of which is typified by the installations here described.

The Process

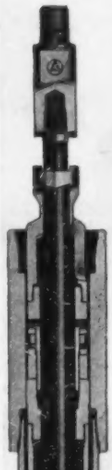
The new cracking units at Buenos Aires and Montreal are each of the type whose operations center about a high temperature cracking cycle employing super-clean circulation. In this circuit the bulk of the gasoline production is effected under pressure and temperature conditions favorable to high antiknock value gasoline without excessive gas production. The viscosity breaking is accomplished with the heat from the high temperature heating coil discharge, and is sufficiently effective that the use of a separate heating coil for this purpose is not required. A prominent feature of the units is the comparatively small amount of heating surface required per unit of gasoline producing capacity.

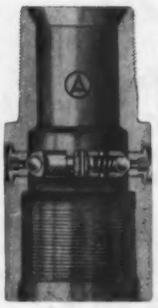
The feed stock upon entering the system is subjected to flashing and fractionation to segregate its residual constituents along with heavier previously cracked fractions for viscosity breaking in the high temperature zone. The feed to the high temperature heating coil, prepared by fractionation of cracked and uncracked vapors, is suitable for the application of temperature well above 1,000° F. Upon emergence from the high temperature coil, the cracked stream mixes with the flashed residuum and the composite passes into the soaker in which a minimum liquid body is maintaned. The residual oil in mixing with the entering heated stream is brought to an active cracking temperature and at the same time much vaporization occurs. In the subsequent passage of the commingled stocks through the soaker, the heavier constituents both in liquid and vapor phase are subjected to comparatively high conversion temperatures for a short time. This temperature may exceed 900° F. and the naphtha formed undergoes sufficient high temperature vapor phase soaking to acquire an antiknock value unusually high for naphth from this source. The digestion zone



New cracking unit at the Montreal plant of McColl-Frontenac Oil Co., Ltd.

New AXELSON Products





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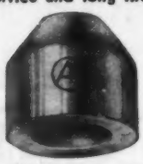

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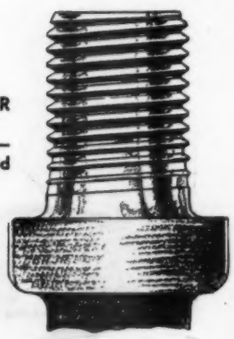

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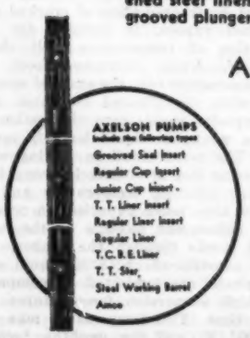

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AXELSON PUMPS AND SUCKER RODS

usually maintained at pressures of about 400 pounds and with the conditions employed, coke deposition here as well as in the rest of the system is negligible.

From the soaking drum, liquid and vapor are withdrawn independently. The vapor passes through a pressure reducing valve into the fractionating system where it is first contacted with the heavier part of the fresh feed stock and then further fractionated to condense the high temperature heater feed stock, which latter stock is thus made up of cyclic constituents as well as some virgin constituents from the fresh feed. The remaining vapor comprises the gasoline production and passes thence to the condensers or Gray treating tower as is required. The liquid drawn from the soaking drum is flashed at low pressure. The vapors are used to preheat entering fresh feed, and their lighter portion is used for high temperature heater feed while their heavier portion passes with the corresponding virgin fraction into the high temperature heater outlet. The ultimate fuel oil residue is withdrawn from the fuel oil flash tower.

Operating Results

The refinery of Ultramar at Buenos Aires in which this type of cracking system is employed is a complete one producing lubricating oils and other products, as well as gasoline and fuel oil. The combination unit started up in August, 1934, and its operations will be confined to the running of 2,500 bbls./day of crude, along with a small amount of gas oils from other sources. The Me-Coll-Frontenac installation which started up about the same time is designed to accommodate 4,000 bbls. per day topped crude of a character such as East Texas, and running down to a 10-12° A.P.I. fuel oil residue.

Detail operating results from neither of these plants were obtainable for the present writing. A fairly accurate idea of their performance may be obtained however by consideration of data from a similar unit in the United States running a Mid-Continent reduced crude. The data shown in the following is for a unit which averages about a month of continuous operation between scheduled shutdowns.

CHARGE: MID-CONTINENT REDUCED CRUDE

Operating Conditions

Heater inlet temp., deg. F.	670
Heater outlet temp., deg. F.	935
Soaking drum temp., deg. F.	880
Soaking drum pres., pounds	300
Heater inlet pres., pounds	700
Fractionator pres., pounds	150
Tar flash twr. pres., pounds	22
Crack per pass, per cent	20

Yields

Gasoline, per cent	48.50
Fuel oil, per cent	42.15
Gas, per cent	13.40

Products

	Charge	Gasoline	Fuel oil
Grav.	26.0	63.0	10.0
Visc./122 Furol	...	...	725
Octane, CFRM	...	70	...
I.B.P.	500	80	...
E.P.	...	400	...

Refinery Equipment for Aruba, D. W. I., Refinery

Pictures show equipment to be installed at Aruba, D.W.I., refinery of the Lago Oil & Transport Co., where major improvement and enlargement program is now under way. Upper view shows 10x56-foot tower being welded at shop in United States. It is said to be the first large fractionating tower ever welded on an automatic alternating current fusion welding machine developed by General Electric Co. Lower view shows tower being loaded on boat for shipment to Aruba with skyline of New York City in background. Special precautions are required in shipping tower. Cross braces may be seen in the ends of the sections of the tower on the railroad cars. Tower was designed and fabricated by Foster Wheeler Corp.

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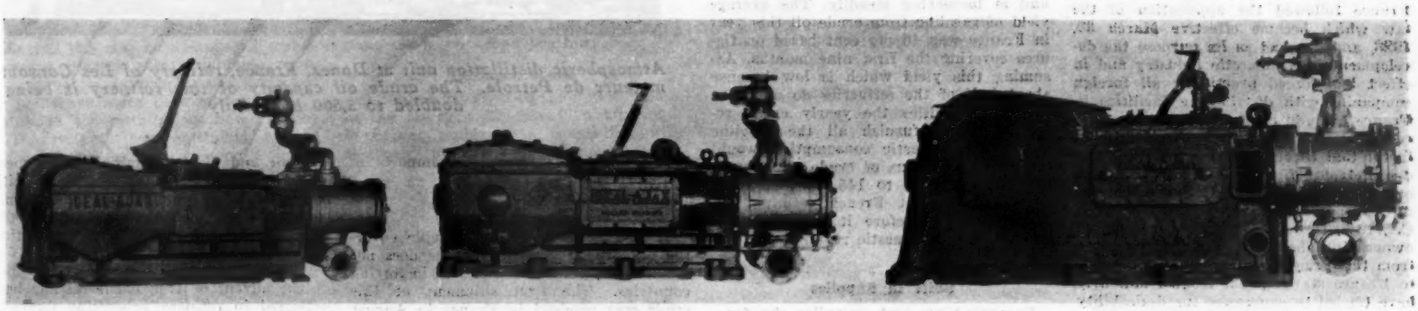

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10 x 10	Semi-Enclosed, Plain Crankshaft Bearings, Slide Valves	7,800	182
11 x 11	Semi-Enclosed, Plain Crankshaft Bearings, Slide Valves	10,600	240
12 x 12	Semi-Enclosed, Plain Crankshaft Bearings, Slide Valves	10,800	240
12 x 12	Enclosed, Roller Bearing Crankshaft, Slide Valves	16,500	312
12 x 12	Enclosed, Roller Bearing Crankshaft, Piston Valves	16,300	312
14 x 14	Enclosed, Roller Bearing Crankshaft, Piston Valves	27,500	500
14 x 14	Enclosed, Roller Bearing Crankshaft and Crank Pins, Piston Valves	27,700	500

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FRANCE

Refining Industry Continued to Expand in Number of Plants and Output

Atmospheric distillation unit at Donez, France, refinery of Les Consommateurs de Petrole. The crude oil capacity of this refinery is being doubled to 3,500 bbls. daily

The French refining industry—the modern period of which extends over the past five years—continued to expand over 1934 with further gains in plant output assured for 1935. Available data indicate that when official reports are released they will show that 14 refineries in France during 1934 refined more than 4,000,000 tons of crude oil or approximately 80,000 bbls. daily. Last year the average crude runs to stills were approximately 50,000 bbls. daily, in 1932 17,000 bbls. and 1931 less than 10,000 bbls. daily.

The growth in refining facilities in France followed the application of the law which became effective March 30, 1928, and has had as its purpose the development of a domestic industry and in effect has forced practically all foreign companies with distributing facilities in France to build refineries to supply their requirements. There was the additional factor that through Compagnie Francaise des Petroles in which the government owns controlling interest, France became directly associated in the Iraq Petroleum Co., Ltd., through a 23.75 per cent stock ownership. The initial crude oil supplies from this Iraq venture are being shipped to France starting last August and they have tended to emphasize the desirability of having large facilities for refining crude petroleum into finished products.

The direct incentive for refinery construction has been the import duties which permit crude oil for domestic refining to be imported free with heavy duties on imported finished petroleum products. The government also has a licensing arrangement which establishes quotas which take into consideration both the distributing and refining facilities of individual companies in France. These companies are only authorized to sell the quantities stipulated on the license issued to them. The licenses for the three-year period starting April 1, 1935, were renewed October 1, 1934.

French Importations

The following table gives the importations of crude oil and refinery products for the first nine months of 1934 and 1933 (data in tons):

	1934	1933
Crude oil	3,138,200	1,908,000
Gasoline	828,370	1,357,100
Lubricating oil	123,370	145,700
Fuel oil	216,800	473,600
Gas oil	188,800	273,600
Kerosene	31,320	68,890
Road oil, etc.	42,700	72,400

This table can be considered with the following giving the sources of supply for crude oil imports for the first eight months of 1934 and 1933 (data in tons):

Country of origin—	Quantity 1934	% of total	Quantity 1933	% of total
Colombia	160,518	5.75	6,925	.43
Ecuador	67,906	2.43	26,903	1.64
Dutch Indies	253,050	9.06	199,360	12.19
Mexico	.....	.....	16,681	1.03
Peru	309,301	11.07	31,900	1.95
Persia	336,562	12.05	146,080	8.95
Rumania	44,625	1.60	9,191	.56
Russia	139,237	5.00	55,128	3.56
Venezuela	593,231	21.25	434,216	26.55
United States	907,511	32.50	701,944	42.92
Total	2,811,941		1,635,356	

The first table shows the situation previously mentioned in which the increased operations of refineries in France have necessitated greater imports so that they were 50 per cent greater the first nine months of this year than the same period in 1933. This meant that the French refineries supplied a larger percentage of domestic requirements and imports of finished products decreased. In the case of gasoline this decrease was 40 per cent and fuel oil and kerosene 55 per cent.

The domestic demand for gasoline in France is about 3,500,000 tons yearly and is increasing steadily The average yield of gasoline from crude oil this year in France was 46 per cent based on figures covering the first nine months. Assuming this yield which is low because about half of the refineries do not have cracking facilities the yearly crude requirements to furnish all the gasoline needed for domestic consumption would total 7,600,000 tons of crude oil annually. This amounts to 145,000 tons daily which shows that French refining can further expand before it becomes overbuilt so far as domestic requirements are concerned.

Shift in Supplies

In regard to crude supplies the foregoing table shows considerable shifting in 1934 compared with 1933. The United States which furnished 43 per cent of the requirements in 1933 dropped to 32.5 per cent this year. The fact that federal control in the United States tended to curtail supplies available for export movement is held partially responsible for this development. Colombia and Peru gained in importance due in part to the increased demands of the Standard Franco-Americaine de Raffinage which finished a complete 20,000-bbl. refinery costing approximately $15,000,000. Some of the South American crudes from these two countries are being used in the manufacture of lubricating oils. To take care of the increased requirements of its two refineries in France the Anglo-Persian Oil, Ltd., increased its imports of Persian crude oil.

Iraq in 1935

It will be noted that the table covering only the first eight months does not include Iraq in the list of importing countries. The first shipment of this crude was received in France in August to the account of Cie Francaise de Raffinage, the refining subsidiary of the Compagnie Francaise des Petroles and run to storage. Regular shipments are now being made and the crude is being refined at the Havre refinery. The company's Martigues refinery on the Mediterranean will be completed early next year and will operate exclusively with the Iraq crude.

Other French refineries including those of the Shell, Standard, Anglo-Persian and Socony-Vacuum which are associated with the French interests in the Iraq Petroleum Co., Ltd., will also secure a part of the crude supplies from the Iraq. It is anticipated that imports from Iraq in 1935 will exceed those of any other country. The Iraq deliveries at the Tripoli and Haifa terminals are expected to be around 75,000 bbls. daily within another six months and the French refineries are scheduled to absorb better than 50 per cent of this total production.

Enlarging Plants

The advent of Iraq crude oil has been reflected in refinery processing methods. The Iraq crude has a high sulphur content and its straightrun gasoline amounting to about 27 per cent is low in octane rating. To take care of the latter, additional cracking and reforming facilities will be needed. The Cie Francaise de Raffinage at Le Havre is adding reforming equipment to its present cracking facilities and its new refinery at Martigues will also have equipment to reform naphtha.

At Rouen, one Dubbs cracking unit and one reforming unit is being added to the distillation capacity of the Petit-Couronne refinery of La Societe Anonyme des Petroles Jupiter.

As shown in the accompanying table, the 15 refineries in France including the one which will start operating in the near future have a capacity of 5,825,000 tons yearly, or 116,500 bbls. daily. The 14 operating refineries are now running about 70 per cent of capacity. At least two companies which do not have lubricating oil plants are considering the installation of solvent process units at this time.

Les Consommateurs de Petroles is doubling the capacity of its Donges refinery with a new atmospheric distillation unit which will have a capacity of 1,700 bbls. daily. This company is a large supplier of fuel oil for railways and steamship lines importing part of the products it sells.

PETROLEUM REFINERIES IN FRANCE

Name of company and location—	Crude oil capacity— Tons yearly	Bbls. daily	Type of plant*
Societe Generale des Huiles de Petrole (Anglo-Persian), Lavera	400,000	8,000	S-C
Societe Generale des Huiles de Petrole (Anglo-Persian), Courchelettes	200,000	4,000	Comp.
Standard Franco-Americaine de Raffinage (Standard of New Jersey, Atlantic Refining Co. and Gulf Oil Corp.), Port Jerome	1,000,000	20,000	Comp.
Compagnie Industrielle des Petroles (Socony-Vacuum), Frontignan	150,000	3,000	S-C
Raffineries de la Vacuum Oil Co., S.A.F. (Socony-Vacuum), Port Jerome	250,000	5,000	S-C
S.A. des Petroles Jupiter (Royal Dutch-Shell), Petit Couronne	750,000	15,000	Comp.
S.A. des Petroles Jupiter, Paullias	200,000	4,000	S
Cie Francaise de Raffinage (Compagnie Francaise des Petroles), Havre	1,000,000	20,000	Comp.
Cie Francaise de Raffinage (Compagnie Francaise des Petroles), Martiguest	600,000	12,000	S-C
Raffinerie du Nord, Dunkerque	250,000	5,000	S
Raffinerie de Berre, Berre	250,000	5,000	Comp.
Soc. des Raffineries de Petrole de Gironde, Bordeaux (Texas Corp. owns interest)	300,000	6,000	S-C
Les Consommateurs de Petrole, Donges	175,000	3,500	S
Ste. Pechelbronn, Quest, Merkwiller	200,000	4,000	S
S.e. Pechelbronn, Quest, Donges	100,000	2,000	S
Total	5,825,000	116,500	

*S—Crude oil skimming or topping. C—Cracking. Comp.—Complete.
†To start operating early in 1935.

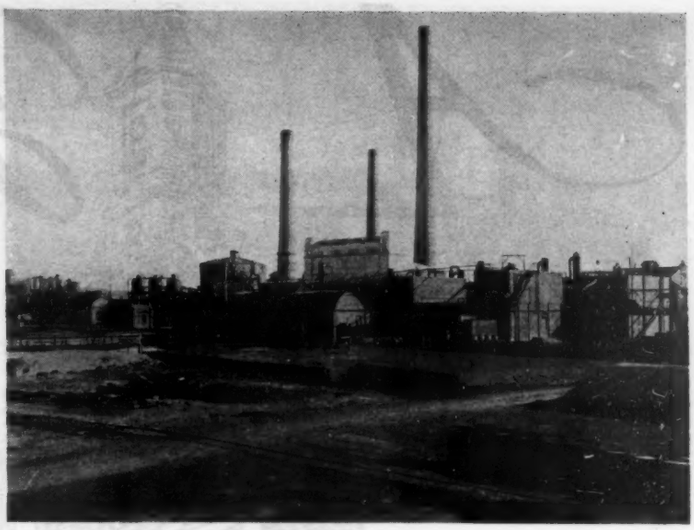
GASOLINE FROM SIBERIAN COAL

A plant for the production of gasoline and kerosene from coal is to be constructed in western Siberia. The annual capacity of the plant is set at 3,500 bbls. and it is expected that approximately 7 bbls. of gasoline and other fuel oils will be obtained from each 1½ to 2 tons of coal, according to the Economic Review of the Soviet Union.

POLAND

State Oil Refinery Acquiring Concessions and Drilling for Oil and Gas

By ZYGMUT BILUCHOWSKI
Refinery Manager, "Polmin" Panstwowa Fabryka Olejow Mineralnych



Largest refinery in Poland. Drohobycz refinery of "Polmin" Panstwowa Fabryka Olejow Mineralnych

The present state oil works refinery "Polmin" at Drohobycz, Poland, has been operating for 25 years. The Polish government inherited this refinery in 1919 from Austria, the building of which was begun in 1909, to utilize the more and more increasing stocks of the crude petroleum. The oil which arrived in the factory at that time was submitted in the raw oil distillery to a process by which the lightest ingredients as gasoline and kerosene are distilled by gradually heating the kettles filled with this material, in form of steam. The escaping steams are liquefied, cooled in refrigerators and poured out continually. The part remaining in the stills was a black oil, which was sold as heating oil to the railways to fire locomotives. It is quite obvious that this was an uneconomic manufacturing process, where valuable residual product was burned as a fuel, and the plant has since been modernized.

Most of the installations now existing at the refinery were installed by the Polish government. The refinery "Polmin" now produces a high grade automobile lubricant (about 64 V.I.) superheat steam cylinder oils (flashpoint about 330° C.) transparent paraffin wax, having melting point of 42-62° C., aviation gasoline, paraffinum liquidum and other products.

"Polmin," as a commercialized state oil works, not only operates the refinery but also is active in discovering and developing new sources of crude supplies.

A 25,000-Bbl. Plant

The refinery "Polmin," having a monthly crude capacity of 1,500 waggons (about 25,000 bbls. daily), is the largest plant in Poland. It has at present four distillation units for various products, topping plant, gasoline and kerosene treating plant, equipment for manufacture and refining of different lubricating oils and greases, lubricant refining plant, paraffin-wax and road-asphalt plants, and some auxiliary equipment.

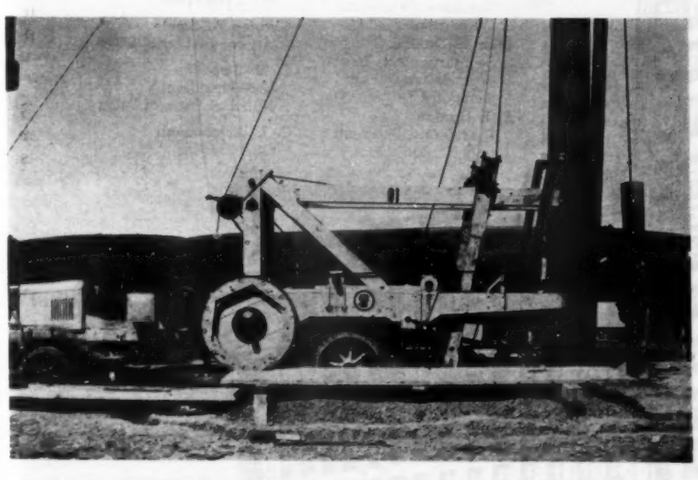
In consequence of present limitations the plant is refining only 800 to 1,000 waggons of crude a month. This is about 12 per cent of the total output of Polish refineries. The plant has refined all types of Polish crude—paraffin base, asphalt base, and mixed base petroleum. The crude supply for the refinery for the most part is drawn with about 14 km. long pipe line from the oil fields in Boryslaw or delivered by rail, in waggons containing 10 tons each, from other petroleum districts.

In addition to its own small crude supply the refinery buys crude petroleum from private producers. A certain percentage of total Polish crude production is at the disposal of "Polmin," as a form of duty to the government. (So-called gross crude oil=ropa bruttowa.)

Research Work

Attention is called to the investigations in the research laboratory, where many important problems in connection with the petroleum industry are successfully solved. For example, very favorable results have been obtained with respect to the preparation of road and asphaltic materials from asphalt base crude oil and paraffin base crude oil. Some years ago Polish roads were surfaced with foreign natural asphalt, as the products of Polish crudes were not considered satisfactory. Road asphalt produced in "Polmin" refinery now meets standard tests and many roads built with a Polmin asphalt are giving as satisfactory service as those of the natural foreign asphalt.

Remarkable results also have been obtained in devising new methods of natural gas utilization such as carbon black production, and chlorinating and treating the gas with aromatic substances. In Polmin's research laboratory a new method of chlorination to secure chloroform and tetrachlorid of carbon from natural gas was worked out. Investigations have been carried on in regard to the selective handling of crude oil and lubricants for treatment with natural gas and light gasoline. Progress has been made in regard to production of gasoline of high antiknock rating, and the production of naphthenic and sulphonic acids. Polmin research laboratory is fitted up with modern equipment, some of which is from abroad such as the Podbielniak apparatus and the C.F.K. antiknock testing equipment.



Drilling rig for shallow wells in Poland developed by "Polmin." The rig is attached to truck from which it receives its power

Eight Hundred Employes

The operating personnel of refinery "Polmin" consists of about 800 workers and about 100 officials. They live in modern cottages, situated about 1 km. from the refinery. The working personnel also has a clubhouse, school and orphanage, tennis courts, stadium and swimming pool.

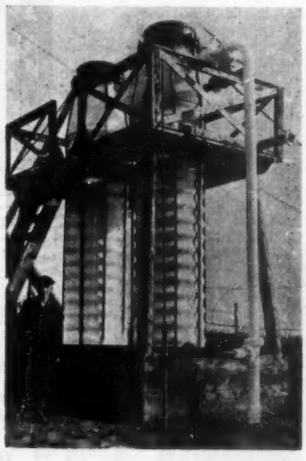
Drilling Concessions

"Polmin" has taken steps to acquire concessions and to drill wells for petroleum and gas. During the last four years successful tests were completed in new areas under exploration and "Polmin" became one of the most important gas producers in Poland. It owns large gas areas situated along the Carpathian Mountains in the districts of Jaslo and Daszawa, and pipe lines to carry the natural gas from its wells to markets. A 40-km. pipe line connects Daszawa fields with Drohobycz and supplies the refinery at Drohobycz and other plants with gas. During the past year a 70-km. pipe line has been built from the gas district of Jaslo to the state nitrogen products factory in Moscice. This welded pipe line can be operated under initial pressure of 20-atm. and will deliver about 300 cubic meters per minute of natural gas. New gas fields in the district of Jaslo are declared to be very favorably located. Polmin is also considering a pipe line from the new field to central Poland in order to deliver cheap fuel to Warsaw and other large metropolitan or industrial areas.

Natural gas from the district of Daszawa is quite dry, 97 per cent methane CH_4, while the natural gas from Jaslo fields is moist and contains about 30-35 gr./m.³ of liquid products. These products are partially removed from the gas in the well, where temperature in consequence of adiabatic expansion is low. This gas, containing gasoline, is delivered to the gasoline plant in Moscice, where the absorption process for extracting gasoline is adapted. The gasoline plant in Moscice has been erected in connection with pipe line construction during the past year and belongs to "Polmin" P.F.O.M.

Data on drilling gas wells show that only 9.9 per cent of exploring works in "Polmin" are unsuccessful, and production of natural gas amounted to 65,000,000 cubic meters in 1933-4. "Polmin," after supplying its own demand, sells a large quantity of natural gas for industrial and domestic purposes.

Drilling for gas is done by "Polmin" in most cases with rotary rig. In new explorations, "Polmin" has adapted flying drilling equipment constructed on the undercarriage of a truck. This equipment, constructed in "Polmin," was submitted to Polish patent. It does its job efficiently in very difficult conditions and one test has reached a depth of 650 meters and continues drilling.



Gas separators covered with frost in Poland

I. G. FARBENINDUSTRIE A. G.

I. G. Farben's progress report for the third quarter of 1934 mentions, with regard to motor spirit production, that the continued extension of the hydrogenation installation at the Leuna works had resulted in the contemplated increase of output. A technical unit on a large scale has been provided at Ludwigshafen-on-Rhine, for the purpose of tests in the hydrogenation of coal.

COAL AND ALLIED INDUSTRIES

Negotiations are in progress for the erection by Coal and Allied Industries, Ltd., formerly Motor Fuel Proprietary, Ltd., of its projected plant for the low-temperature carbonization of coal and fuel oil on a site close to the Vane Tempest colliery at Seaham harbor. The completed plant, the erection of which is estimated to take approximately nine months, is expected to treat about 200,000 tons of coal per annum.

A Financial in the

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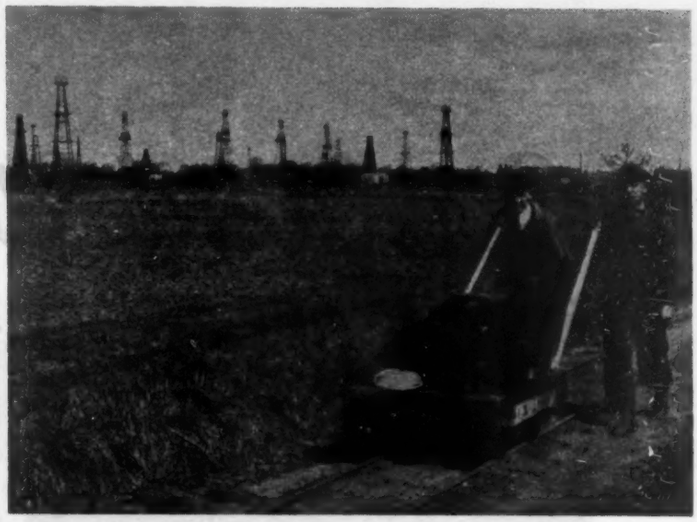
Oil Producer

"THE OIL BANK OF AMERICA" IN TULSA

GERMANY

Development Will Depend Largely on Government's Oil Program

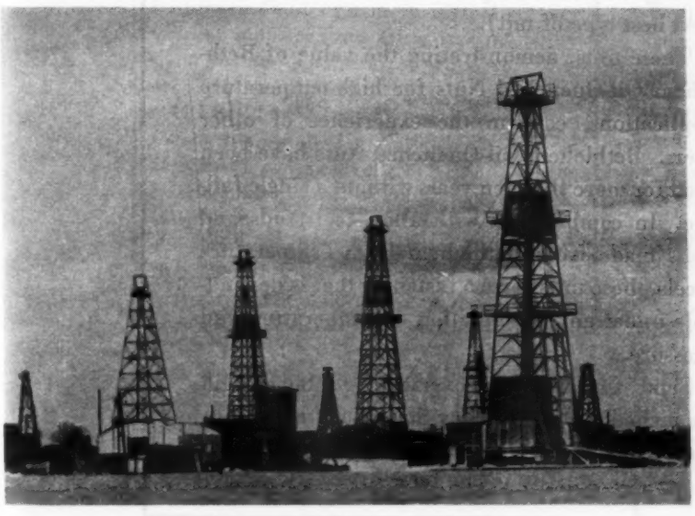
By C. H. EHLERS



Transportation in German field

That the cradle of the petroleum industry of the world, in so far as systematic and planned drilling operations are concerned, is to be found in Germany, may come as a surprise to many. In April, 1858, a year before Col. E. L. Drake drilled his first well near Titusville, Pa., King George of Hanover (Hanover was then a kingdom) authorized the drilling of the first oil well in the world near the village of Wietze about 30 kilometers north of the city of Hanover. This well was drilled by Professor Hunaeus of the Polytechnic School of Hanover, to a depth of 120 feet and although the well could hardly be termed a commercial producer—it produced only 7 bbls. per year—the spell surrounding the magic word "oil" was broken. In spite of the rather discouraging results, this first well furnished the impetus to subsequent drilling operations which were more successful. In many parts of the world, oil wells began to flow and slowly the comic papers ceased to connect the word "oil" with quack doctors and folly.

The development of the German oil industry since these pioneer days, was surprisingly slow, to the great astonishment, especially of foreign students of the situation, many of whom expressed the opinion that it was a pity that Germany had allowed her oil wealth to remain dormant so long.



Recent view in Neinhagen Field, Germany

Four Producing Fields

At present, Germany has four producing fields: Wietze, Nienhagen, Oelheim-Berkhoepen and Oberg. All four fields are situated within a radius of about 30 kilometers from the city of Hanover.

For the last few months, operations in these oil bearing regions have again commanded the interest of domestic and foreign oil companies. There is reason to believe that large financial interests, especially with respect to the Nienhagen district, are backing the various enterprises and in quick succession we hear of new oil strikes in Nienhagen, so that the total production for the current year is estimated to reach approximately 2,300,000 bbls. against a total of 1,700,000 bbls. for 1933 and only 445,000 bbls. 10 years ago, in 1924. It must, however, be understood that this increased production represents exclusively the result of successful drilling operations in the so-called "new Northfield" of the Nienhagen region. None of the other fields contributed to this increase.

A new oil field has been discovered near Bruchsal, state of Baden. The formation is similar to Pechelbronn. The production so far is small and comes from a depth of 2,000 feet. Four wells are drilling at present. The Wintershall Potash Concern, Preussische Bergwerks & Huetten A. G. and Internationale Tiefbohr A. G. are active in the Bruchsal district.

Wietze

The Wietze Field has produced so far about 13,000 bbls. of oil.

Approximately 2,000 wells have been drilled to a shallow depth of from 300 to 1,500 feet of which about 1,500 wells were productive and about 500 nonproductive. One of the most interesting things in the Wietze Field is the "oil-mine" which is owned and operated by the Deutsche Erdoel A.G. There are only a small number of people who know that in Germany oil is produced also by way of regular mining operations. Germany is the only country that has developed this method of production successfully. During the war, in 1915, the Germans sank the first shaft into the oil sand near Pechelbronn, Alsace, which was then a province of the German Reich. The total production of Pechelbronn, when under the control of the Germans, amounted to about 5,000,000 bbls. Today, this shaft is named "Clemenceau" after the late French premier. In 1919 the Deutsche Erdoel A.G., having lost the Pechelbronn Field by virtue of the Treaty of Versailles, completed two shafts in the Wietze Field to a depth of about 800 feet. This "oil-mine" is operated just like a coal mine. Galleries are driven into the oil sand which is brought to the surface and treated with soda and warm water, thus insuring an oil recovery of almost 100 per cent. In connection with the building of the underground galleries, the following story may be of special interest. Just as in a coal mine, pitwood is required for supporting the underground galleries. But the transportation of the wood to the bottom of the Wietze oil mine is much simpler than to the bottom of any coal mine. The method of transportation was found accidentally—through children at play. The pitwood is thrown into an old borehole. The workmen, at the bottom of the mine, give directions through the borehole and piece after piece of pitwood, swaying against the wall of the hole, as it travels downward, reaches the bottom of the mine in a few seconds—an extraordinarily cheap way of transportation.

The Wietze oil-mine produces about 600 bbls. daily. In addition to the gallery operations, there are still approximately 600 producing holes of which 570 are pumped and 30 bailed. The production in the Wietze Field remained steady during the past few years, averaging about 380,000 bbls. per year.

Nienhagen

While Nienhagen produced in January, 1934, 105,000 bbls., the production has increased steadily in the subsequent months, reaching a total of 180,000 bbls. in September of this year, with further indications of a higher output in the near future. In contrast to previous years, drilling operations are now conducted with the most efficient modern equipment and the field resembles an American oil field of our days. The principal producing company in the Nienhagen Field is the "Gewerkschaft Elwerath," which produces about 50 per cent of the total German crude oil output. Other companies operating in the field are Wintershall Potash Concern, Gewerkschaft Krug von Nidda, Gewerkschaft Fortune and, as a late comer, Deutsche Vacuum Oel A.G. (wholly owned subsidiary of Socony-Vacuum Oil Co., Inc.), and a number of smaller companies with a more or less insignificant output.

About three months ago, one of the wells in the "new Northfield," in the course of the attempt to deepen it, to reach a more prolific horizon, caught fire, causing a great sensation, as it was the first oil well conflagration ever witnessed in any of the German fields. Well No. 22 of the Gewerkschaft Nienhagen, in the early morning of September 29, drilling at a depth of about 3,500 feet, suddenly became eruptive and caught fire. Five drillers lost their lives. The well burned for two days until the flow of the oil column could be brought under control and the flames extinguished through the modern foam extinguishing system. This rather unexpected gusher confirms the belief of the optimists that the Nienhagen field still contains substantial oil reserves.

In contrast with this favorable development, the production in the Oberg and Oelheim-Berkhoepen fields has somewhat decreased during the current year, while the production in the Wietze field, as already mentioned, remains steady.

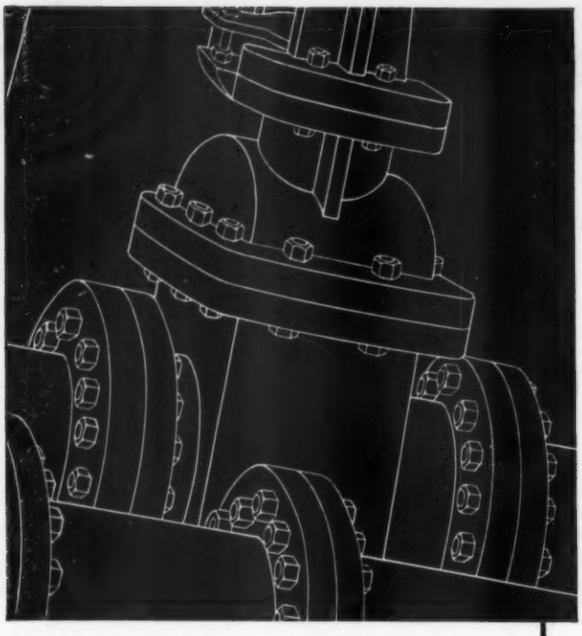
Oelheim-Berkhoepen

The production in this field has decreased in this year, owing to, so it is said, the particularly complicated subsurface conditions in this area. Concurrently therewith, drilling activity has diminished. So far, it was not possible to determine the connection between the old shallow field of Oelheim and the new deep section of Berkhoepen. On the other hand, the northern edge of the field has not as yet been thoroughly explored, so that there are still possibilities in this direction. Furthermore, the western part of the Oelheim salt plug has not as yet been systematically investigated, although good oil showings have been discovered there. It is of special interest to note that the Preussische Bergwerks-& Huetten A.G. (Preussag), which a few years ago paid for the Berkhoepen Field, aggregating about 1,500 morgen with four producing wells on this acreage, the huge sum of 8,000,000 marks to Anton Raky, Germany's most famous "wild-catter," has written off almost its entire investment in this field.

Oberg

In 1933, the Oberg field produced approximately 10,000 bbls. per month. The production in this field decreased in 1934 to about 7,000 bbls. per month, owing to diminished drilling activities. The operating companies apparently had come to the conclusion that there are no producing horizons below 1,500 feet, inasmuch as all efforts with deeper wells so far have proved to be unsuccessful. However, the edges of the field have not as yet been definitely determined, so that the question whether deeper producing horizons are in existence remains to be clarified. In order to solve this problem, a new well to deeper horizons is being drilled at present. The principal producer in the Oberg Field is the "Erdoel Bergbau A.G.," whose entire capital stock was purchased in the beginning of this year by the Deutsche Vacuum Oel A.G. Vacuum's portion in the production of

Steel and Steel Products



TESTS AT 1000 DEG. prove the value of BETHLEHEM *Oil-Quenched* NUTS

ENGINEERS for a Midwestern company, supplying equipment to the oil industry, performed exhaustive tests at 1000 deg. F. upon various nuts. This is what they reported:

"We recommend the medium-carbon, hot-made, oil-quenched nuts as made by Bethlehem —they distorted 57 per cent less—" (than the next best type of nut).

These tests, demonstrating the value of Bethlehem Oil-Quenched Nuts for high-temperature applications, confirm the experience of other users. Bethlehem Oil-Quenched Nuts have been used for more than ten years without a single failure. In combination with alloy-steel studs and bolts made from Bethlehem High-Temperature Steels, these nuts form a fastening that is dependable under any combination of temperature and pressure.

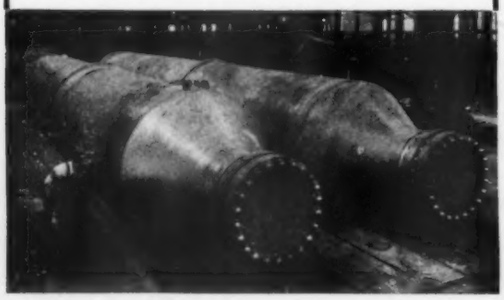
Send for booklet covering Bethlehem Oil-Quenched Nuts and Alloy-Steel Bolts and Studs for high-temperature service.

Refinery Vessels without a "weakest link"

BETHLEHEM Refinery Vessels are forged from a single steel ingot. The ends of the ingot are discarded, the center is punched out, and the resulting cylinder is forged to final size.

No finer steel vessels can be made than are produced in this way. The metal is homogeneous all the way through. And there's not a seam nor a joint in the entire vessel.

Bethlehem facilities permit making these one-piece forged cracking stills in any length, diameter and wall thickness.



The Protection of "Sealed Service"

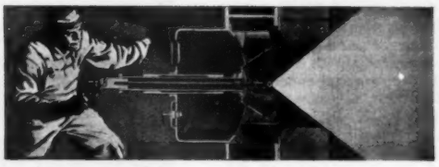
A LARGE and steadily increasing volume of motor oil is being marketed today in refinery-sealed quart containers. And a large proportion of these containers are made from Bethlehem Open-Hearth Coke Tin Plate.

Bethlehem Tin Plate is ideal for oil containers. It has superior stamping qualities and clean, bright surface; it is uniform to gauge, and well coated with bright, new tin.

BETHLEHEM TIN PLATE

for the Oil Industry—

Bethlehem-Dahl *Mechanical-Atomizing* Oil-Burning System



MECHANICAL ATOMIZING, which works by heating the oil and forcing it under pressure through the burner, is an important feature of this equipment. The use of the Bethlehem-Dahl System in virtually every type of industry, and every type of boiler plant, is the best kind of evidence of its economy and flexibility

The Bethlehem-Dahl System can be adapted to any type of boiler of 100 H.P. or over; it burns any grade of fuel oil, even the heaviest, and maintains constant steam pressure over a wide range of loads. A catalog showing typical installations and describing the operation of this oil-burning system will gladly be mailed on request.

778 HEADS IN ONE ORDER

528 Heads, 108 in. dia., 3/8 in. thick, 1½ in. straight flange
204 Heads, 102 in. dia., 3/8 in. thick, 1½ in. straight flange
46 Heads, 96 in. dia., 5/16 in. thick, 1½ in. straight flange

THIS order, handled in Bethlehem Steel Company's Flanging Shop, totaled 460 tons.

The location of the Bethlehem Flanging Shop, with plate mills and the open-hearth furnaces of a large steel plant right at hand, makes it possible to fill large or small orders in any grade of steel with great speed.

Even when the necessary steel plates have to be rolled, it is not uncommon for Bethlehem to complete and ship orders of substantial size for flanged and dished heads within from 24 to 36 hours after the order has been placed. That's why so many buyers of Steel Plates and Heads for applications in the oil industry turn to Bethlehem when they want quick service.

WAX PLANT EQUIPMENT

FILTER PRESSES, Wax Distillate Chilling Machines, Wax Moulding Presses, Scale Wax Cooling Drums, Paraffin Wax Sweater Plants, Wax Testing Presses.

Complete Wax Plants designed and built.

BETHLEHEM LINE PIPE

BETHLEHEM PIPE has the strong, uniform sections, with smoothly finished ends, and the flexibility and easy-welding qualities that are essential in pipe for line service.

In pipe-line work, in any other application, you can depend on Bethlehem Pipe for long, trouble-free service.

OTHER BETHLEHEM PRODUCTS USED IN THE OIL INDUSTRY

ALLOY STEELS, for all purposes.

CORROSION-RESISTING STEELS—Bethadur and Bethalon, covering virtually every requirement.

FORGINGS—Carbon and alloy steel; hammered and hydraulically pressed; drop and upsetter.

SHEETS—All kinds of sheets; black and galvanized, flat and corrugated. Sheets of Beth-Cu-Loy (copper-bearing steel) for use wherever rust-resistance is important.

WIRE—Plain and galvanized; Bethanized wire (special zinc-coated).

CARBON STEEL BARS STRUCTURAL SHAPES BOILER TUBES

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OIL WELL ALCO TOOLS
TRADE MARK REG.

CORE CATCHER
(Pat. No. 1889277)

CATCHER SEATED
IN SHOE

The Alco Core Barrel ....

..... takes the largest core possible consistent with free circulation. The 12¼ shoe cuts a 6-inch core.

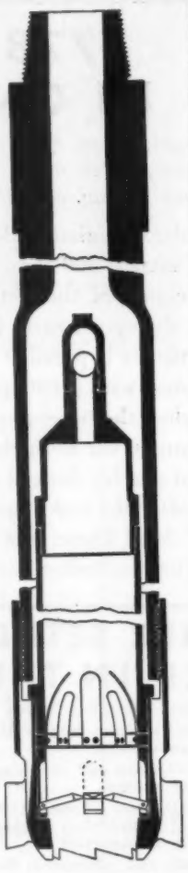
The patented Draper Core Catcher seats unfastened in the shoe. This permits free inner barrel action, regardless of drill pipe rotation.

The machine-steel teeth in the catcher remain mortised in the wall of the catcher during the drilling. Therefore they cannot mar the core.

An extra spring-type catcher sits independently above the Draper catcher and lends added assurance to core getting.

The floating inner barrel permits copious lubrication of both catcher and core. Consequently the catcher cannot freeze to the shoe.

When the string is pulled, the catcher's spring-actuated teeth open toward center and thus cut off and firmly hold the core. No burning in.



CORE SHOE

The Alco Barrel has achieved great success in Kettleman Hills and the Mountain View field, in California; also in the Gulf Coast district and in all parts of the world.

FURTHER DETAILS AND PRICE LIST ON REQUEST.

ALCO TOOL COMPANY, LTD.
G. HOWARD HUTCHINS, Receiver.
Post Office Box A, Compton, California, U.S.A.
Cable Address: "Alcotool"

the Oberg Field is approximately 150 bbls. per day.

According to latest reports, the "Ebag," after a period of unsuccessful drilling operations, brought in a producer in the northern part of the field. Initial production figures, however, have not as yet been reported. This new success is expected to revive drilling operations, especially in as much as drilling costs are rather low in this field.

Operations of Foreign Companies

Besides the principal German companies, namely Gewerkschaft Elwerath, the Preussische Bergwerks-& Huetten A.G., the Wintershall Potash Concern, etc., the following foreign companies have taken an active part in the attempt to investigate the oil regions of the northwestern German plain and to locate new fields: The North European Oil Corp. (Delaware), Cities Service Co., Anglo-Persian Oil Co., Ltd., Royal Dutch-Shell group and Socony-Vacuum Oil Co., Inc. North European Oil Corp. played a pioneer role in the German oil "boom" in 1929 and 1930. This company, at that time, was engaged in an active leasing campaign acquiring approximately 1,600,000 acres of land through oil and gas lease contracts with individual landowners and governmental concessions. About one-half of this acreage was sold to the Royal Dutch-Shell interests in 1931 against payment of an amount of about $900,000. The remaining acreage was transferred in the summer of this year to the Deutsche Vacuum Oel A.G. (wholly owned subsidiary of Socony-Vacuum Oil Co.). The principal terms of the agreement between the companies provide payment to the North European of a net profit participation or at the option of North European, of a straight overriding royalty, in the event of production from operations on the acreage transferred.

Vacuum's Position in Germany

Since 1897, Deutsche Vacuum Oel A.G. has operated two refineries. This company has a large buying and marketing organization and in order to fortify its position, recently went also into the producing end of the business. We have already mentioned the acquisition by Vacuum of the entire share capital of the "Ebag," the principal producer in the Oberg Field. During the last 12 months, Deutsche Vacuum drilled three wells on a small tract of land in the "new Northfield" of Nienhagen, all three of which came in as producers. The wells were drilled to a depth of 3,000 to 3,600 feet and their initial daily production is reported to have been between 150 and 750 bbls. Through the acquisition of the huge acreage which formerly belonged to North European, Socony-Vacuum has become the largest holder of acreage in the potential regions of the northwestern German plain and should become a factor of substantial importance in the German oil industry in the event of favorable results of contemplated drilling operations. There are also rumors current that Socony-Vacuum will acquire the oil concession covering a large portion under the territory of the state of Bavaria which is held at present by an American individual who has caused the investigation of this territory through an extensive torsion balance survey and it is reported that structures favorable for oil accumulation have been discovered in the Bavarian area. Whether Socony-Vacuum will start drilling operations on its vast holdings in the near future or defer these to a time when contractual obligations will compel them to drill remains to be seen. One of the principal holdings of

Pipe line in Neinhagen Field, Germany

the acreage transferred by North European to the Vacuum comprises the western part of the state of Oldenburg, while the eastern part of this state territory belongs now to the Royal Dutch-Shell group. North European Oil Corp., during the years 1929-1933, has conducted an extensive geophysical survey with the torsion balance in Oldenburg and Ostfriesland, which joins the Oldenburg territory toward the west, and has located 11 salt domes in both regions.

Government Finances Operations

According to latest advices, the German government's oil program provides for the drilling of 57 wells in the vicinity of known salt domes and geological favorable structures. Forty-six wells will be drilled in the province of Hanover, eight wells in Thuringia, two wells in

(Continued on Page 112)

Loading rack for crude oil in Germany

SURWEL

The *Surwel* Gyroscopic Clinograph surveys a well accurately and records vertical deviation and its direction at all depths, giving the well owner a true map of the well in permanent photographic form. It is the only instrument which is not affected by *Tortuosity* nor by *Magnetic Influence* when recording. The *Surwel is* self-checking, producing as it does duplicate records for each survey—one going in and the other coming out of the hole. As in the case of all our instruments the service is confidential and the results alone available to the purchaser.

(U. S. Patents 1,124,068, 1,812,994, 1,959,141, 1,960,038 and others pending).

SURWEL

Announcing

the H-K

(HEWITT) (KUSTER)

Directional Magnetic Clinograph

We are pleased to announce that we have acquired as of Jan. 1st, 1935, the exclusive sales and distributing rights for this well surveying instrument. In consequence, Sperry-Sun can now offer the trade a complete line of well surveying instruments for every purpose. Syfo—Surwel—H-K—each serves its own particular function better than, to the best of our knowledge, any other means of determining the straightness or direction of the drill hole.

H-K Directional Magnetic Clinograph

This Clinograph introduces a radical improvement and an exclusive method of recording in single readings both the amount and the direction of inclination, utilizing the triangular suspended cross hair plumb bob and floating compass principles, together with a simple, automatically operated and practically fool-proof photograph camera. The H-K Clinograph is designed for *open holes only.* It is lowered into the open hole on a sand or bailing line at a speed ranging from 400 to 800 feet per minute.

The H-K instrument provides permanent and extremely accurate records which are available to the drilling crew, within five minutes after the instrument comes out of the hole. The records are made on paper discs.

Complete information on the H-K Directional Magnetic Clinograph may be obtained by writing us for a new booklet which is now on the press.

Sample record made by the H-K

SPERRY-SUN WELL SURVEYING COMPANY

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SYFO

Daily use of the *Syfo Clinograph* permits accurate control of inclination in drilling operations. The tests are accurately and easily made *without the use of dangerous acids.* The *Syfo* can be used on a wire line or as a "Go-Devil" running inside the drill stem, or on sand or bailing line in open hole. The *Syfo* Clinograph quickly and inexpensively furnishes daily records on paper of vertical deviation in drilling—records that can be permanently filed.

(U. S. Patent 1,962,634 and others pending).

SYFO

Natives of Iraq watching the shield-arc welding of one of the world's longest oil lines.

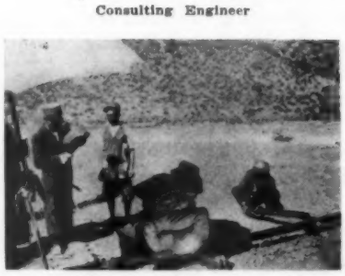
How Shielded Arc Welding Cuts Costs In Production, Refining and Transportation

By E. W. P. SMITH
Consulting Engineer

The widespread and rapidly increasing use of electric arc welding as a construction and maintenance tool in the producing, transporting and refining branches of the oil industry is due primarily to the remarkable economies effected wherever the electric arc has been properly applied. A decided stimulus was given to the use of electric welding by the development and introduction of the shielded arc process by The Lincoln Electric Co. This shielded arc process boosted the physical properties of the weld to a par, and in some cases above par, with the properties of mild rolled steel.

Corrosion, an important and often the determining factor in longevity of pipe lines, storage tanks and refinery equipment, has less effect on shielded arc welds than mild steel. This greater resistance to corrosion is important for it is responsible for longer life and greatly reduced costs of maintenance of equipment constructed by shielded arc welding.

The first cost or construction cost of storage tanks, piping, refinery equipment, pipe lines and even tanker ships is also materially reduced due to the greater speed of welding made possible by the shielded arc. In many cases welding with the shielded arc can be done two or three times faster than with previous methods.



Head Shields, though unnecessary, are highly prized by Persian helpers in pipe line welding gangs on 47-mile, 3-inch line to Abdan refinery.

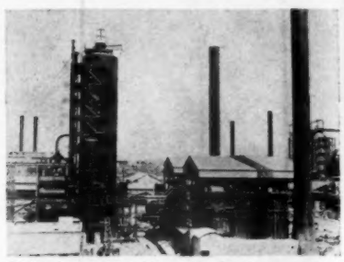
There are hundreds of widely varied applications of electric arc welding in the three branches of the oil industry previously mentioned. Some idea of the cost cutting possibilities obtainable by use of the electric arc may be gained by the following brief descriptions of some of the many applications.

Pipe Lines

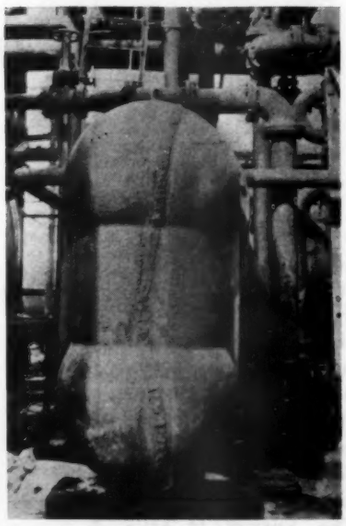
Approximately 20,000 miles of pipe lines have been field-welded by the electric arc. Since the introduction of the shielded arc process more than 10,000 miles of pipe lines have been constructed by this method. The pipe sizes of arc welded oil and gas lines range from 3 inches to 26 inches in diameter. Length of lines varies from a few miles to more than a thousand miles. Speed of welding of pipe line joints varies, depending upon type of joint employed, geographical and weather conditions. However, the average speed for welding by the shielded arc process as compiled from actual welding records of lines completed in the last two years is better than one minute per inch diameter of pipe.

The principal reason for the extensive and rapidly growing use of shielded arc welding in pipe line work is due to the improvements afforded, such as an absolutely pressure-tight line at all times having joints possessing strength and ductility and resistance to corrosion equal to or greater than that of the pipe itself. The possibility of leakage at the joints is therefore eliminated for the life of the pipe. Thus a remarkable economy is effected by practical elimination of pipe line maintenance.

Repairs to old pipe lines are greatly facilitated by the use of arc welding. With this process the necessary repairs can be made while the line is in service. In the case of oil lines work can be continued without displacing the oil and with the line in service either under pressure or standing full of oil; hence the service of the line is not necessarily lost while repairs are in progress. This feature of arc-welded repairs effects tre-



Shield-arc welding is playing an important part in the construction of the Anglo-Persian Oil Company's new refinery at Abdan.



Cast iron flanged head for heat exchanger repaired by shield-arc welding with Ferroweld electrodes.

Speed of welding with "Shield-Arc" welder makes this equipment preferred on pipe line construction.

A cooling box is constructed more economically by shield-arc welding.

mendous economies over other methods.

Refineries

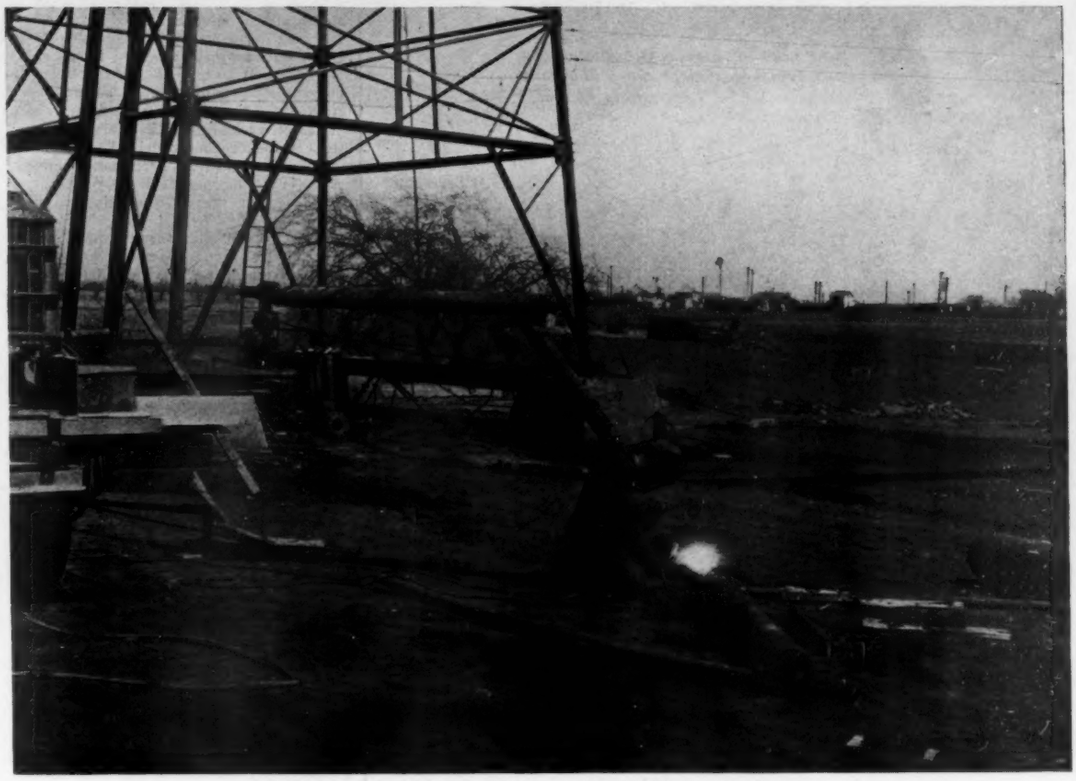
There is probably no other industry in which arc welding is used as extensively as in the refining industry. A very large percentage of refinery equipment is of arc-welded steel construction. Modern types of cracking stills, fractionating towers, evaporators, cooling boxes, condensers and piping systems are typical of the equipment constructed by the shielded arc. Due to the high quality of the physical properties of welds made by the shielded arc process, refinery equipment which operates under pressure and high temperature is almost always welded by the shielded arc.

Worn, badly corroded and leaky refinery equipment is usually repaired by the addition of reinforcing material applied by electric arc welding. Where particularly severe corrosive action is caused by certain types of crude oils, equipment is often lined with stainless steel which is applied by the electric arc.

The start of a 135,000-bbl. storage tank of shield-arc welded construction.

Storage Tanks

Storage tanks of completely arc welded construction are now preferred by the major oil companies for the reason that this type of construction eliminates practically all possibility of loss through leakage and permits design of tanks which hold evaporation losses to a minimum. Straight wall cylindrical tanks, also spheroids and spherical tanks, up to 100,000-bbl. and more capacity have been constructed completely by the shielded arc process of welding.



Piping and equipment at the well is shield-arc welded.

In the Oil Fields

The ability of the electric arc to build up worn drilling tools has made its use popular in production shops in the oil fields. Fish tails, rotary core bits and other types of drilling tools which have become worn in service can be built up to original by the application of weld metal with the use of the electric arc. To the cutting edges and surfaces subject to shock and abrasive wear, wear-resisting material can be applied by arc welding. This reclamation of worn drilling tools effects tremendous economies, in that the work tool may be rebuilt numerous times before it is necessary to replace it with a new tool.

In many fields it has been found that welding of well casing with the shielded arc, also fabrication of Christmas trees and other equipment, is the most economical method.

Fabricating piping for large tank farm by shield-arc welding.

Shield-arc welding the Christmas tree of the world's deepest oil well.

Importance of Proper Welding Equipment

To take full advantage of the economies offered with the electric arc welding process, it is essential that the welding equipment be able to generate uniform welding current, as this is essential for the most rapid production of sound welds. It should also furnish the high voltages required for welding by the shielded arc process—in other words, possess a high kw capacity. Though the equipment has high capacity, it should also show high efficiency at full loads which should increase on overloads, with a minimum of loss at no load.

Recent surveys of major American and foreign oil centers reveal that the majority of welders of recent type are "Shield-Arc" welders manufactured by The Lincoln Electric Company of Cleveland, Ohio. Machines of this make are described in detail on Page 149.

By far the majority of electrodes used for shielded arc welding are those manufactured by The Lincoln Electric Company under the trade name "Fleetweld". Use of these electrodes is essential when welding with the shielded arc. Other electrodes are manufactured by this company especially for repair of cast iron, welding of 18-8 stainless steel, aluminum, manganese steel and for hard surfacing.

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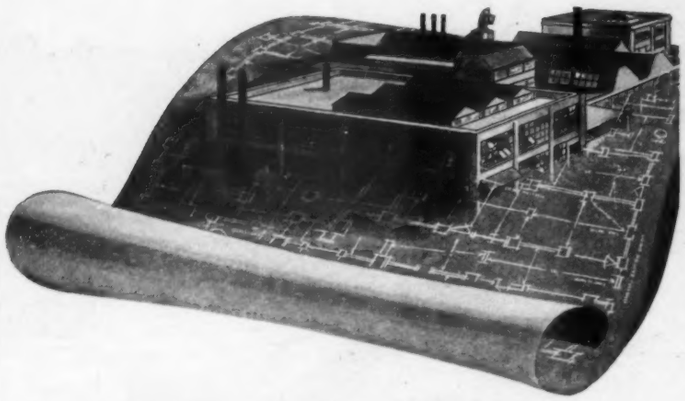

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the state of Baden, near the city of Bruchsal, and one well near the city of Bentheim, near the Holland frontier. It is of interest to note that two wells with governmental subsidy have already been started on the Sottorf salt dome, south of Hamburg and near Bentheim, and that these wells are being drilled on the former properties of an American company, the North European Oil Corp. Drilling of the above named 57 wells will take place on 14 different salt domes and five geological structures, which would mean that only three wells are apportioned to each salt dome or structure. Whether this rather limited exploration activity will suffice to obtain a conclusive interpretation of subsurface conditions remains to be seen. Consequently, the drilling program of the German government for 1934 can only be regarded as the first step in its efforts to discover new oil fields of prolific nature. In addition to its financing of drilling operations, the government has declared itself ready to spend a large sum for the purpose of making a thorough geophysical survey in a number of areas where indications warrant it.

Synthetic Production of Gasoline

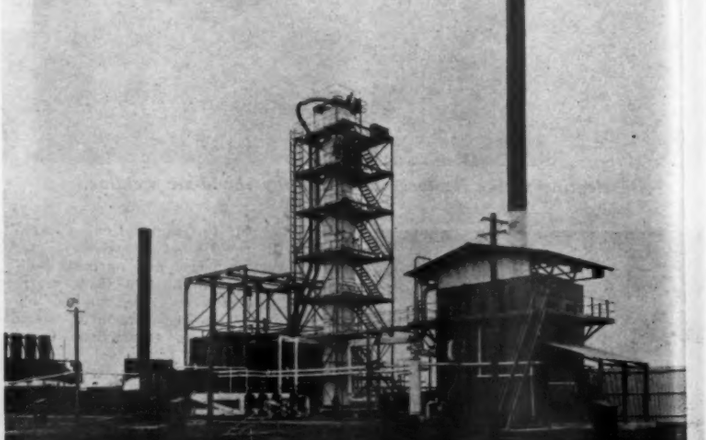
While the production of crude oil is estimated to reach about 2,300,000 bbls. for the current year, the I. G. Farben Industrie (Germany's dye trust) during the last few months has increased its production capacity for synthetic gasoline from 100,000 tons (750,000 bbls.) to 300,000 tons (2,200,000 bbls.). According to reliable reports, the formerly rather high production costs have been lowered substantially through improvement of the Bergius process. In addition to I. G. Farben Industrie's increased capacity, it is reported that at the initiative of the German government, a corporation with a capitalization of RM 100,000,000 has been organized for the purpose of manufacturing gasoline by virtue of similar synthetic processes.

Conclusions

The development of the German production problem is gradually coming to a point where a decision must be made whether and in what direction the activities shall go on. Much will depend upon the outcome of drilling operations instituted by the government. Quite a number of wells on various so far nonproducing salt domes have resulted in good oil showings but none of these wells has become commercially productive and so far no new prolific field has been discovered. The increase in Germany's oil production, both through drilling operations and synthetic manufacture, has been greeted in Germany with great satisfaction. Nevertheless, this increase cannot be called extraordinary in view of the fact that Germany's consumption of oil products of various description is likewise increasing. Therefore, a great deal of additional pioneer work remains to be done in order to give the large number of salt domes in the northwestern German plain a proper test to determine their oil potentialities. There are more than 70 known salt domes and probably many more as yet to be discovered, of which only four have so far furnished production in paying quantities. If one considers that in America the percentage of unsuccessful drilling operations on salt domes is much higher than the percentage of dry holes on other geological structures in the American oil fields, it is still too early to draw any definite conclusions with respect to the possibilities of the salt dome areas of the northwestern German plain.

In spite of both the increase in crude production and the synthetic manufacture of gasoline, Germany, in all probability, will be compelled to continue the importation of large quantities of oil products. The new Germany is stimulating motorizing by lowering or abolishing automobile taxes. The production of motor vehicles has increased substantially during the current year. Germany has started the construction of an automobile express highway system in many parts of the country.

We have already mentioned the Socony-Vacuum Oil Co. and the Royal Dutch-Shell group in connection with their acquisition of large tracts of oil-promising areas for future development. Both transactions are in so far of significance as they indicate that these two major foreign concerns apparently have faith in the ultimate favorable development of the regions acquired by them. Although the territory under the federal state of Oldenburg and the Ostfriesland acreage must be termed entirely as of the "wildcat" type, this area is regarded as being located geologically in the deepest part of the salt basin of the northwestern German plain and the belief is expressed that they will contain oil fields of prolific nature, if they contain any oil at all, but in spite of all the favorable indications and on the basis of actual developments, especially during the current year, the question whether Germany will ever become an oil producing country of importance still remains a problem.



New pipe still unit at the Laverton, Victoria, Australia, refinery of the Commonwealth Oil Refineries, Ltd. Battery of old shell stills shown at extreme left

U.S.S.R.

Technical Development of the Petroleum Refining Industry Since Nationalization

The oil refineries constructed in Russia long before the war operated during the entire course of the war period without any reinvestment in the way of maintenance or repairs and remained during the period of the civil war without any supervision. At the time of the nationalization of the oil industry these plants were in a bad state of repair. While it was expedient in the first period after nationalization, when exclusive attention was devoted to the stabilization of the declining industry, to get along with these depreciated facilities in the second period with the beginning of the reconstruction of the industry, coincident with the beginning of the development of export, it was necessary to undertake a renewal of the technical equipment so that the oil refining industry would synchronize not only with the reconstruction of the general economy but also with the changes in oil refining technique itself.

The turning point from antiquated methods of operation to modernized production in the field of drilling and exploitation of oil fields was in the 1923-24 period at which time an extensive development of activity began in this direction. As regards the refining plants this point was somewhat delayed. Such a situation must be explained by the fact that the capacity of the refining plants existing when nationalization was effected considerably exceeded the production of the oil fields. Notwithstanding their extremely depreciated condition, the plants managed to refine the crude oil received from the oil fields. Reconstruction of the plants therefore did not present itself with such urgency and insistence as in the case of the depreciated fields.

The tasks facing the oil refining plants, being complicated and on a wide scale, naturally could not be fully solved in 1925-26, the period when reconstruction and rationalization began in the plants but definite and considerable achievements in increasing and improving the products and in rationalizing and reducing the cost of production are already attained. The increased efficiency of the refining plants by operating trusts must be described first.

Straight Distillation of Crude Oil

Azneft: Since the nationalization of the industry, there has been considerable increase in Azneft's throughput capacity. Compared with the 11 shell still batteries which Azneft possessed at the beginning of the reconstruction period for straight distillation, with an annual capacity of 4,870,000 tons, there have been constructed and placed in operation since the end of 1927 the following:

In Baku, four shell batteries, annual capacity, 1,690,000 metric tons; in Batoum, one shell battery, annual capacity, 1,100,000 metric tons; total, five shell batteries, annual capacity, 2,790,000 metric tons.

In Baku, 12 pipe stills, annual capacity, 3,940,000 metric tons; in Batoum, four pipe stills, annual capacity, 1,900,000 metric tons; total, 16 pipe stills, annual capacity, 5,840,000 metric tons.

In all, 21 new installations, annual capacity, 8,630,000 metric tons.

With the original 11 installations there is now a total of 32 units with an annual throughput capacity of 13,500,000 tons, distributed as follows:

	(Capacity in 1,000 metric tons) Shell batteries	Annual capacity	Pipe stills	Annual capacity	Total	Annual capacity	In per cent
Old	11	4,870	..	....	11	4,870	36
New	5	2,790	16	5,840	21	8,630	64
Total	16	7,660	16	5,840	32	13,500	
In per cent		56%		44%			100

Thus it will be seen that the increase in yearly crude oil capacity for Azneft was 8,630,000 tons, or 178 per cent. Sixty-four per cent of the present plant capacity was erected after 1927.

Grozneft, under the pressure of sharply increased production was forced sooner than Azneft to start the construction of new plant units and delayed longer than the latter the modernization of its existing plant. The first pipe stills were put into operation in 1929 and since then shell stills with improved heat exchangers have been constructed and some of the old stills rebuilt. At the beginning of the reconstruction period there were in all four workable shell stills for crude oil distillation with a total yearly capacity of 2,290,000 tons, and three rather obsolete units which had to undergo extensive reconstruction. Since 1925 the following units were either newly built or completely reconstructed:

In Grozny, three shell batteries, annual capacity, 2,210,000 metric tons; in Touapse, one shell battery, annual capacity, 1,100,000 metric tons; total, four shell batteries, annual capacity, 3,310,000 metric tons.

In Grozny, nine pipe stills, annual capacity, 4,705,000 metric tons; in Touapse, two pipe stills, annual capacity, 815,000 metric tons; total, 11 pipe stills, annual capacity, 5,520,000 metric tons.

Grand total, 15 new installations, annual capacity, 8,830,000 metric tons.

With the four original shell stills there is now a total of 19 units with a total annual capacity of 11,120,000 tons, distributed as follows:

	(Capacity in 1,000 metric tons) Shell batteries	Annual capacity	Pipe stills	Annual capacity	Total	Annual capacity	In per cent
Old	4	2,290	..	....	4	2,290	20.6
New or reconstructed	4	3,310	11	5,520	15	8,830	79.4
Total	8	5,600	11	5,520	19	11,120	
In per cent		50.4%		49.6%			100

Maineft: The shell still battery in Krasnodar was rebuilt and the annual throughput capacity increased from 250,000 tons to 430,000 tons. In addition a new modern pipe still installation has been constructed with an annual capacity of 500,000 tons.

Aviatop: The two obsolete shell still batteries in Gorky and in Yaroslavl (Konstantinovsky plant) were junked. In their place at the Konstantinovsky plant, four shell rerun batteries were built, with an annual capacity of 220,000 tons, and in Gorky a kerosene-lub pipe still installation, with an annual capacity of 125,000 tons, was completed.

In Habarovsk this year a newly constructed combination cracking installation went into operation for the refining of 200,000 tons of topped Sakhalin crude per year.

Sredazneft: This trust has two shell still installations with an annual capacity of 150,000 tons, reconstruction of which is not yet completed. For the entire Soviet Union we have the following summary for that part of the oil refining industry which performs straight distillation of crude oil:

	(Capacity in thousand tons) Old shell batteries	An. cap.	Constructed after nationalization: Shell batteries	An. cap.	Pipe stills	An. cap.	Total	An. cap.	Total	Annual cap.
Azneft	11	4,870	5	2,790	16	5,840	21	8,630	32	13,500
Grozneft	4	2,290	4	3,310	11	5,520	15	8,830	19	11,120
Maineft	1	250	..	180	1	500	1	680	2	930
Aviatop	..	....	1	320	2	325	2	545	3	545
Sredazneft	2	150	..	....	..	....	..	....	2	150
Total	18	7,560	10	6,500	30	12,185	40	18,685	58	26,245
In per cent		28.80%		24.77%		46.43%				100%

The first column does not include the two old shell batteries of Aviatop which were junked. It will therefore be seen that instead of 20 installations with an annual capacity of 7,800,000 tons, there are at present 58 installations of 26,245,000 tons annual capacity, representing an increase of 336 per cent.

Together with an increased capacity for the straight distillation of crude oil, there was also an increase in throughput capacity for the further distillation of residue into lubricating oil.

When the industry was nationalized, the following equipment for this purpose was in existence and more or less workable: In Baku, nine lub stills with an annual capacity of 1,000,000 tons; in Grozny, one rather old shell still with a total annual capacity of 85,000 tons; at the Konstantinovsky plant one shell still with a total annual capacity of 80,000 tons; in Gorky, one shell still with a total annual capacity of 40,000 tons.

Consequently we had 12 stills with a total annual throughput capacity of 1,200,000 tons.

Azneft: Up to the present time we have constructed and placed in operation in Baku one new plant of 20 shell stills with an annual capacity of 318,000 tons, six high-vacuum pipe stills with an annual capacity of 1,500,000 tons. In addition, the nine old units in Baku were rebuilt and to most of them overhead pipe stills were added, considerably increasing the throughput capacity, so that now the total annual capacity of these nine installations is 1,357,000 tons. In Batoum a vacuum pipe still was erected with an annual capacity of 250,000 tons. The total for Azneft at the present time, therefore, is as follows:

	(Capacity in 1,000 metric tons) Shell batteries	Annual capacity	Pipe stills	Annual capacity	Total	Annual capacity	In per cent
Old	9	1,357	..	....	9	1,357	33.6
New	1	318	7	1,750	8	2,068	66.4
Total	10	1,675	7	1,750	17	3,425	
In per cent		48.9%		51.1%			100

In Grozneft, where the production of lubricating oil at present is not an important part of the total operations, three high-vacuum pipe stills have been constructed with a total annual charging capacity of 450,000 tons. The old incomplete lubricating shell still was turned over to the production of asphalt. Grozneft in this way increased its throughput capacity for lubricating oils by 428 per cent, and all of this capacity now consists of complete high-vacuum pipe stills.

Aviatop: In Gorky, a kerosene-lub still was erected, making it possible to dispense with the old and quite obsolete lubricating still for obtaining lubricating oil. The throughput capacity of the lubricating part of the new pipe still is about 78,000 to 80,000 tons of fuel oil per year. The old shell still now produces asphalt from the bottoms received from the kerosene-lub pipe still.

Aviatop: In the Yaroslavl plant the capacity of the shell still was increased to 110,000 tons of lubricating oil charging stock annually. At this plant also, in 1935, a high-vacuum pipe still will be completed and placed in operation with an annual capacity of 150,000 tons mazout. All of the capacity of the distillation units for heavy oils of this trust will thus in the near future reach 340,000 tons annually, that is, an increase of 483 per cent.

For the entire Soviet Union we have the following summary of equipment for distilling lubricating oil charging stock into lubricating oils:

	(Capacity in thousand tons) Old shell batteries	An. cap.	Constructed after nationalization: Shell batteries	An. cap.	Pipe stills	An. cap.	Total	An. cap.	Total	An. cap.	Before national.	An. cap.
Azneft	9	1,357	1	318	7	1,750	8	2,068	17	3,425	9	1,000
Grozneft	..	....	..	....	3	540	3	540	3	540	1	80
Aviatop	1	110	..	....	2	230	2	230	3	340	3	120
Total	10	1,467	1	318	12	2,520	13	2,838	23	4,305	13	1,200
In per cent.		34%		7.4%		58.6%		66%		100%		

In addition to the above there have been placed in operation:

1. At the Konstantinovsky plant an installation for the production of bright stock, with an annual output of 80,000 tons.

2. In Baku three high-vacuum pipe stills, Pengu-Gurvitch-Neresesov process, for the distillation of bottoms obtained in large quantities in connection with the production of lubricating oils from heavy oils. Total annual input capacity is 180,000 tons.

3. In Baku a large combined plant for the production of 40,000 tons of bright stock per year from Surakhansky charging stock.

Cracking Plants

When the petroleum industry was nationalized, there was not a single cracking installation in existence in the Soviet Union. The rising development of motorization in the Soviet Union and the mechanization of agriculture confronted the Soviet petroleum industry with the problem of increasing the production of gasoline. The introduction of the cracking process was the quickest way to meet this situation, and beginning in 1927-28, the construction of cracking units was started. The first cracking installation, Vickers process, was placed in operation in 1929. At the present time we have the following cracking installations:

Azneft: In Baku four units, annual capacity, 450,000 tons. In Batoum six units, annual capacity, 850,000 tons

Note—This article prepared in U.S.S.R. for this issue through courtesy of G. V. Ackerman, Amtorg Trading Corp., New York.

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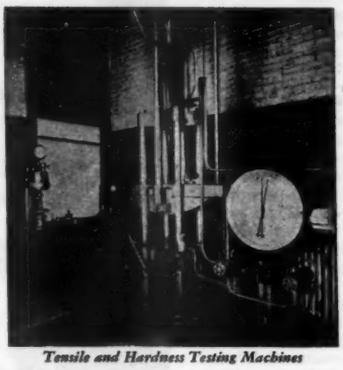

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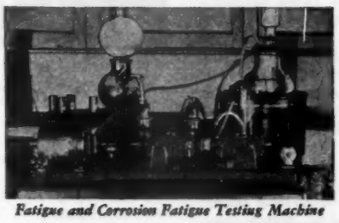

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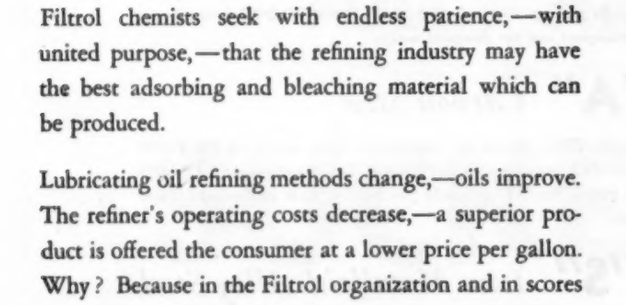

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Total, 10 units, annual capacity, 1,300,000 tons.

Grozneft: In Touapse, two cracking units, annual capacity, 360,000 tons. In Grozny, 12 units, annual capacity, 2,200,000 tons. Total, 14 units, annual capacity, 2,560,000 tons mazout. To this must be added two units in Grozny under construction now, which will be placed in operation in 1935, with an annual capacity of 300,000 tons, which will give Grozneft a total of 16 units with an annual capacity of 2,860,000 tons.

Aviatop: At the Konstantinovsky plant, one unit, annual capacity, 60,000 tons. In Habarovsk, one unit, annual capacity, 160,000 tons. Total, 10 units, annual capacity, 1,420,000 tons.

The summary for the Soviet Union therefore shows 36 cracking units with an annual throughput capacity of 5,580,000 tons, which add about 1,300,000 tons of cracked gasoline per year to the gasoline production of the Soviet Union.

Treating

With the increased capacity of the oil refining plants and the construction of cracking units, there has been a corresponding increase in modernizing and enlarging the equipment for the treatment of petroleum products and of all other auxiliary equipment in the oil refining process, such as pumps, compressors, pressure distillate rerun units, steam pressure operations, etc. In connection with the treating equipment and treating methods may be mentioned:

(a) A radical change in the methods of treatment for gasoline and kerosene. Batch treatment of these products was replaced by continuous treatment without air agitation. A number of new installations were constructed for the continuous treatment of gasoline and kerosene in air-tight units where the treatment of kerosene is done by means of injectors. The productivity of this process is thereby doubled, and the losses are reduced and the consumption of chemicals lowered.

(b) The introduction of sodium plumbite treatment for gasoline which considerably improved the quality of the product.

(c) In the treatment of lubricating oils, the use of bleaching clays was introduced for a number of products such as motor oils, industrial oils and transformer oils.

In Baku a special treating plant was constructed and placed in operation, with a capacity of 1,000,000 tons of lubricating oil per year, using contact filtration with bleaching earths. In 1935 it is planned to start construction of another plant in Baku of somewhat lower capacity. We have mentioned the large plant in Baku for the production of bright stock; here also contact filtration is used with bleaching earths.

Greater Yields

With the newly constructed pipe still installations and with the improvements added to the shell stills, a substantial increase was obtained in the yield of light products.

Straightrun Gasoline. A larger percentage of the gasoline content of the crude oil is being obtained. In Baku on the average 9 per cent of the gasoline content is now being obtained by straight distillation, while Grozny is able to extract 9.7 per cent of the gasoline fractions. For the entire Union in 1930, 9.9 per cent of the crude oil was run into gasoline compared with 2.7 per cent in 1913. Beginning with 1931, however, the percentage of gasoline obtained by straightrun distillation began to decline as follows:

1930	1931	1932	1933	1934 (plan)
9.9%	9.8%	9.2%	8.0%	7.3%

This decrease in the percentage yield of straightrun gasoline is a consequence of the steadily increasing amount of heavy crudes run to stills in the Soviet Union.

Kerosene. The following table shows kerosene produced in the Soviet Union as a percentage of crude oil run to stills:

1924-25	1926-27	1928-29	1930	1933	1934 (plan)
20.5%	22.5%	21.0%	20.6%	20.3%	21.5%

Considering the increase in gasoline-naphtha fractions and the increased amount of heavy crudes in the total runs to stills, and above all, the fact that the kerosene fractions since 1932 have been taken off with lower endpoints (315° C. instead of 340° C.), it must be recognized that maintenance of the percentage level for kerosene, as shown above, is an achievement.

G. V. ACKERMAN

Lubricating Oils. The following table shows both total figures and percentage yields in the production of lubricating oils:

(Production in thousand tons)

	1924-25	1926-27	1928-29	1930	1931	1932	1933	1934 (plan)
Lubricating oil	1,648	300	371	528	652	680	1,123	1,217
Per cent of crude oil	3.3%	3.5%	3.4%	3.3%	3.3%	3.4%	6.1%	5.4%

We see here that there is both a total increase in the production of lubricating oils and an increased yield on a percentage basis. Especially noteworthy is the increase in 1933, when the high-vacuum stills and the new treating plant were placed in operation. At the same time there was an increase in production of special oils, such as motor oils, bright stock, transformer oils, turbine oils and others, accompanied in the last two or three years by a very considerable improvement in quality. We may also remark on the fact that certain heavy crudes which, before the war, were considered exclusively fuel oil crudes, are now being successfully run to lubricating oils.

New Products

In comparison with pre-war times, the assortment of petroleum products has widened considerably. We have already mentioned motor oils, bright stock and other special oils, which previously either were not manufactured at all or were entirely unimportant in quantity, but which constitute a considerable proportion of current production.

Besides the basic products, gasolines, illuminating oils and lubricants, production of a series of products was undertaken after the nationalization of the industry which did not exist at all in the pre-war range of products manufactured from crude oil. Some of these are as follows:

Paraffin Wax. Not counting a small experimental plant in Baku, which was constructed at the beginning of the cen-

tury for the manufacture of paraffin wax from Chelekinsky crude oil, no solid paraffin was manufactured until 1928, when Grozneft placed in operation a plant, constructed by that trust after American designs for the production of paraffin wax from Grozny paraffin base crude oil. Although production was small at first, the last three years it has increased steadily with changes and improvements in the technical process to suit the characteristics of the crude oil and the requirements of consumers for certain definite specifications. Production of paraffin in the last three years follows: 1932, 15,000 tons; 1933, 18,000 tons, and 1934, 33,000 tons.

At the end of the current year (1934) the plant will operate at the rate of 50,000 tons per year, which is the planned production for 1935.

Asphalt. The production of petroleum asphalt, a process in existence in the United States for over 30 years, has been in use in the Soviet Union not more than six or seven years. In connection with the motorization of the country referred to above and the beginning of a wide program of construction of modern asphalt highways, the petroleum industry in 1927 had to prepare for the production of a new product, petroleum bitumen. But the demand at the beginning was slow and, therefore, production developed slowly. It was only in 1930, with the enlarged program of road building in the U.S.S.R. and the development of the roofing industry and the growing demand from the electric, rubber and metallurgical industries, that the production of this commodity began to take an important place in the oil refining industry. In the last three years production of petroleum asphalt was as follows: 1932, 104,000 tons; 1933, 140,000 tons, and 1934 (estimated), 200,000 tons. The planned production for 1935 is 350,000 tons.

In this connection we may mention the adoption of a new method, worked out by Engineer Neresesov, which has shortened the process and considerably increased the capacity of the plant. Also worth mentioning is the successful application of a continuous system of producing asphalt from the bottoms, which at first presented considerable difficulties. Our final success with this method has resulted in many very important advantages over the noncontinuous method.

Ashless Coke. The production of coke began as a result of the requirements of the newly founded aluminum industry in the Soviet Union. The coke used by this industry must have certain specific physical and chemical characteristics. It must be practically ashless and contain a minimum of sulphur. The heavy residue of the Soviet crude oils provide the best raw material for the production of coke of the required characteristics. The manufacture of this product is now fully developed. Special shell stills have been erected with a total capacity of 25,000 tons of coke per year. Under construction now and to be placed in operation at the beginning of 1935 are new units with an additional capacity of 25,000 tons annually. The production of ashless coke for the last three years follows: 1932, 4,000 tons; 1933, 6,000 tons, and 1934 (estimated), 23,000 tons.

Plans for Immediate Future

Realizing the necessity of satisfying the quantity and quality requirements of the rapidly developing national need for petroleum products, the oil refining industry must develop still more rapidly in the near future in all branches of its activity. Technical plans are being laid down to make it possible to refine all of the crude oil produced and to refine deeper from the point of view of a maximum increase in the yield of the valuable light products, i.e., gasoline, kerosene and lubricants, with a corresponding reduction of fuel oil. In particular, the production of gasoline must be increased, this constituting the most important product; the output of lubricating oil is to be raised; asphalt production must develop in accordance with the needs of the road building industry of the Soviet Union; and in connection with the wide application of roller bearings, a substantial increase in the production of greases is planned, current production of this commodity being only 40,000 tons per year.

Accompanying these quantitative problems is the problem of more efficient production. In this connection new methods of treatment must be widely applied to do away with the sole use of the acid-caustic method, which yields products not always conforming to required specifications. Furthermore, in the development of oil refining, the chemical industry also must play a more important part. The task of utilizing crude oil as a chemical raw material has been placed before the research institutes with the aim of increasing efficiency in utilization through the development of various methods of chemical refining.

New Construction

With these considerations the oil refining industry is planning (and has partly realized):

(a) The construction of new combination units on the basis of the localization of refining in consuming centers in conjunction with water and pipe line transportation of the raw material; and (b) reconstruction of the old shell stills and incomplete pipe stills in so far as this equipment is technically inferior to modern American equipment. The following construction work is to be undertaken:

Distillation Equipment: New units for the distillation of crude oil down to fuel oil to consist of the most modern tube stills with large capacity rectifying towers for a maximum yield of light products. The distillation of crude oil down to still bottoms in the new plants to be carried on in two-stage atmospheric vacuum tube stills. The basis of the reconstruction of the old shell stills for straight refining will be the addition of rectifying bubble towers, with the application of charging through the towers, in this connection the re-equipping of these stills is done in such a way that when the shell stills are replaced, the whole plant can be changed over completely to tube stills with the same towers. Moreover, it is planned to replace obsolete heating equipment with modern heat exchangers; to replace steam pumps by electric pumps and to utilize the by-product steam for heating, wherever that is possible. The reconstruction of incomplete tube stills will consist in the gradual substitution of new units in the heating and rectifying operations. Again, in connection with all the plants, it is planned to provide dehydrating equipment as well as measuring equipment with the idea of bringing under automatic control all production factors where constants have to be maintained (temperature, pressure, levels, etc.).

Cracking. With a view to improving the antiknock characteristics of gasoline, these are being constructed not only liquid-phase cracking units, but also combination liquid and vapor phase units. For the same purpose, reforming also is being undertaken. In certain cases it is planned to combine cracking and straight distillation in order to utilize the waste heat of cracking. It is planned also to utilize cracked fuel oil for the production of asphalt in the cracking process itself by the installation of vacuum steam towers.

Treating of Petroleum Equipment. The following changes in the treating methods are planned: Straightrun gasoline will be treated with doctor solution or hypochlorite to remove mercaptans, increase stability and improve color and odor. Pressure distillates will be treated in the vapor phase with bleaching earths by including this process in the general design of the cracking process.

For the treatment of lubricating oils, wide application of bleaching earths and contact filtration is planned. Solvent refining is to be introduced.

Greases. New cooking units are being constructed on the basis of the auto-

(Continued on Page 140)

Mud and Paraffin Clogged Sands Prevent Maximum Production

CLEAN OUT with a MILLER

ПРОИЗВОДИТЕ ЧИСТКУ НАСОСОМ МИЛЛЕРА

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In oil fields throughout the world, the MILLER Sand Pump is saving money for oil men through increasing the productiveness of individual wells—often paying for itself on the first well cleaned.

Equipped with any of FOUR Type Bottoms, the MILLER is a combination tool that quickly and efficiently removes loose sand and mud and quickly cuts away paraffin clogged oil sands, exposing the clean fresh sand increasing oil seepage.

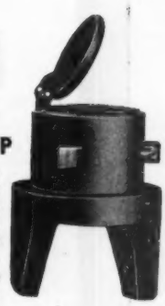
1. Rope Socket Neck unscrews, lock comes out so wire line can be removed from pump without cutting the wire line.
2. Bail electric welded to tube.
3. Drop forged eye bolt.
4. Long, heavy plunger with ball and seat in bottom.
5. Seamless steel tube.
6. Bottom bushing shrunk to tube and electric welded.
7. Drop forged latch over heavy spring to hold bottom. Set screw for added safety.
8. Four type bottoms STAR—SAND PUMP—BAILER and CHISEL.

The MILLER is made in diameters of 2½, 3, 3½, 4, 4¼, 5, 7 and 9 inches and lengths of 20, 25 and 30 feet.

MILLER SAND PUMPS ARE SOLD BY ALL LEADING SUPPLY COMPANIES

7 CHISEL (In Pump) Will save the expense of running tools, as its Chisel shape breaks up **8** tightly packed sands, cutting edge hard surfaced.

STAR BOTTOM
Used for cutting the sand loose, cutting edge hard surfaced.



SAND PUMP
Used when tools are run and when well is shot to quickly remove loose material.

BAILER BOTTOM
With the Bailer Bottom installed the MILLER is changed to a bailer giving you the combination of either a bailer or a sand pump in the one tool.

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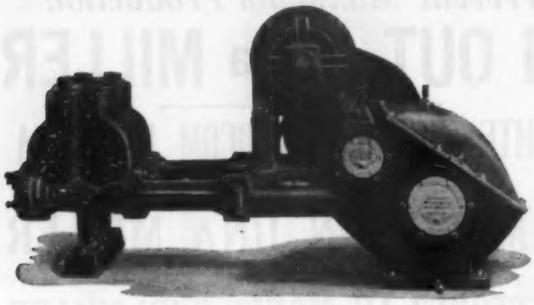
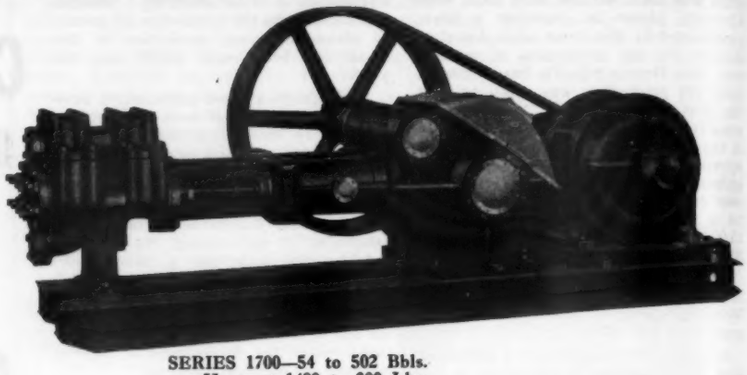
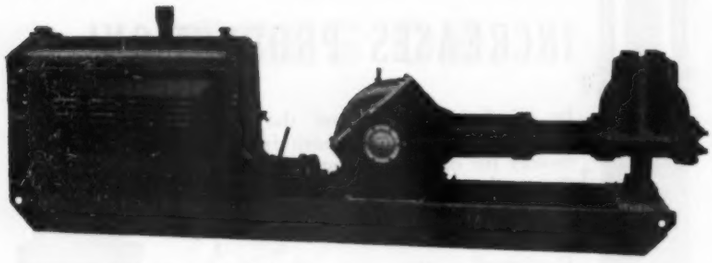


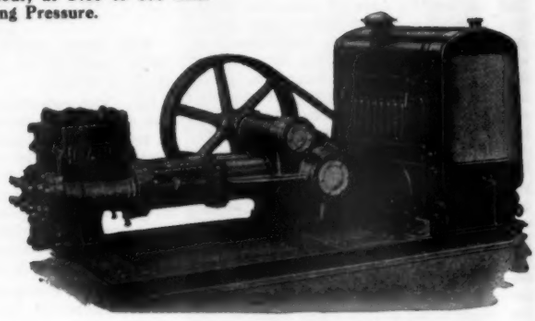
SERIES 1500—63 to 475 Bbls. per Hour, at 800 to 175 Lbs. Working Pressure.



SERIES 1700—54 to 502 Bbls. per Hour, at 1400 to 300 Lbs. Working Pressure.



SERIES 2000—63 to 475 Bbls. per Hour, at 800 to 175 Lbs. Working Pressure.



SERIES 1800—50 to 288 Bbls. per Hour, at 650 to 150 Lbs. Working Pressure.

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FIG. 601—Walking Beam Pump, 30 to 55 Bbls. per Hour, at 600 to 400 Lbs.

FIG. 604—For Gas or Vacuum. 26 to 28 Points Vacuum, 14" to 20" Cyl.

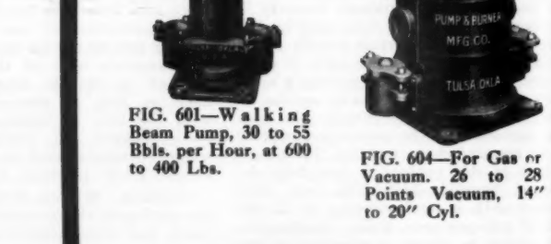


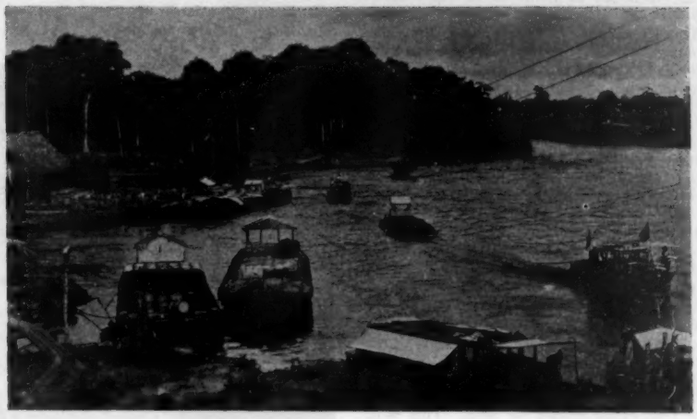
FIG. 301—Jerker Pump, 32 to 157 Bbls. per Hour, at 750 to 300 Pounds.

GASO PUMPS

COLOMBIA

Barco Development Gradually Taking on More Definite Form With New Drilling

By C. O. WILLSON



Puerto Barco, of the Barco concession, on the Rio Catatumbo where a camp has been established in connection with the development of the Rio de Oro structure. Supplies coming through Lake Maracaibo and up the Rio Catatumbo are landed at this point

With several tests completed in recent months including three producing wells the Barco development work in Colombia is gradually taking on definite form with more important drilling assured for the coming year. In the history of the oil industry probably no search for new oil fields has ever been attempted under more difficult conditions and the steady progress of the past two years attests to the courage and ingenuity of engineers in carrying on an undertaking in which the actual drilling of tests is a minor detail.

Transporting supplies and equipment by land and water in a jungle country inhabited by hostile Indian tribes, building highways and railways and the establishment of permanent camps including the raising of vegetables and cattle for food which would not otherwise be available—all previous to the entry of the drilling rig—constitute a major accomplishment in construction which in the future is certain to become more and more a part of the hunt for new oil reserves in unknown lands.

The Barco concession, the limits of which are indicated in the accompanying map, consists of approximately 415,000 hectares (approximately 1,000,000 acres) in eastern Colombia with part of the western boundary of Venezuela constituting the eastern boundary of the concession. The Barco concession was first acquired by the Doherty interests which drilled one test in the Rio de Oro area in 1919. With some changes in boundaries, the present Barco was acquired by the Colombian Petroleum Co. in 1931. The Colombian company is owned approximately 75 per cent by the South American Gulf Oil Corp. (Gulf Oil Corp.) and 23.67 per cent by the Carib Syndicate, Ltd. The development of the property is being carried on by the Gulf interests.

Under the terms of the agreement with the Colombian Government the Colombian company is obligated to carry on certain exploration work and this has been under way for approximately two years, following a year of geological investigations. Under the contract the Colombian company is required to select 50,000 hectares from the concession by 1936. An additional 150,000 hectares can be selected up to 1941. The drilling already completed and that to be done over the next two or three years is for the purpose of determining whether oil is available in sufficient quantities to warrant intensive development. The latter is tied in with the building of a pipe line over the Andes mountain range to some part on the Caribbean Sea, a transportation project which it is estimated would represent an additional expenditure of approximately $15,000,000. No decision will be made in regard to the building of this line until the exploration work is completed but it is apparent that fields with a large production will have to be discovered before such a large expenditure for pipe lines could be justified.

As previously indicated, the transportation of supplies and other work preliminary to drilling has been the major problem in the development of the Barco up to the present time. The supplies including the heavy drilling equipment are brought to the camps and distributing points through Venezuela via Lake Maracaibo which is about 150 miles east of the eastern boundary, by river transportation. At the mouth of the Catatumbo River the supplies are changed from lake to river barges and moved up the river.

The heaviest equipment can only be transported up the river during the rainy season of October, November and December and this in effect has meant that those in charge of operations have had to arrange to have a large part of their equipment transported during three months of the year.

La Petrolea Structure

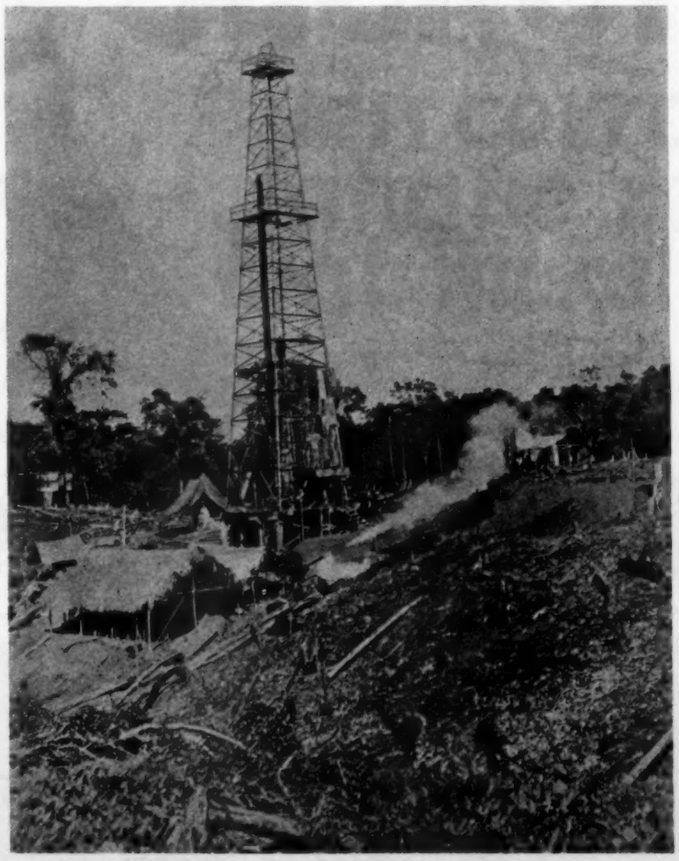
The actual drilling to date has been confined to what is known as the North and South Domes of the La Petrolea structure Tara anticline located as shown in the map in the southern half of the concession. In this area operating with Puerto Reyes as a base it has been found expedient to build a narrow gauge railway to transport supplies to the drilling sites and about 22 kilometers (14 miles) of line have been built to date. Part of the land in this section is extremely marshy during the wet season and the railway is a more practicable means of transportation than highways.

The first test to be drilled in the Petrolea area was the No. 1 which blew in unexpectedly March 4, 1933, at a depth of 490 feet less than one month after it was spudded in. This test quickly obtained world-wide attention not only due to the discovery of oil but more particularly to the fact that it immediately caught fire. Fire fighting experts from the United States were called before the well was placed under control several weeks later. It was necessary to plug and abandon the test at that time.

Properties of Crude

The test did determine the pressure of oil at the shallow depth. This crude and that which has since been obtained from later tests has a gravity of approximately 42 A.P.I. Other characteristics of the oil are: viscosity at 100—32; pour below 50°F.; color, light green; color, N.P.A. 6.5; sulphur, 0.16. In a distillation test the crude shows a straightrun gasoline yield of 52 per cent with a 22 per cent yield of distillate and gas oil. Pale and red neutrals are obtainable from the heavier fractions with a fuel oil residuum of 5 per cent.

After the plugging of the No. 1, the Petrolea No. 1-A started drilling in August, 1933, about 1,150 meters southeast of No. 1 as shown on the map. This test drilled to a depth of 3,007 feet. It passed through the sedimentary formations encountering metamorphic rock back through various stages and was at 2,950 feet. This test was plugged back through various stages and was eventually completed as an 800-bbl. well in Cretaceous formation. The intervale open to production is 666 to 886 feet.



Petrolea No. 1-A of the Colombian Petroleum Co. This test was drilled after it was necessary to abandon No. 1 following fire

Complete 2,500-Bbl. Well

The No. 2 Petrolea, located 3,200 meters south of No. 1, was completed in May, 1934, as the first commercial well of the Barco. At a producing depth of 668 to 708 feet it showed a 2,500-bbl. daily production based on a six-hour test. The No. 4 Petrolea, which started drilling in June of this year, was completed in November as a 50-bbl. well. This test, which is located 1 kilometer due east of No. 1-A on the east flank of the structure, was drilled to a total depth of 2,102 feet and then plugged back to 1,850 feet where it was completed with 175 feet of open hole.

The No. 5 Petrolea started drilling in September. It is located 6 kilometers south of No. 1-A in the saddle between the North and South Domes with the formation 1,200 feet lower than in the No. 1-A. According to late reports, it has been drilled to a depth of 2,461 feet with no important oil showings. Additional zones at lower depths will be tested.

The first test of the South Dome, to be known as the No. 3 Petrolea, will start drilling next March. The railway at this time is being extended to the site which is approximately 4,300 meters south of No. 5 Petrolea.

The No. 6 Petrolea, located midway between No. 1-A and No. 4, started drilling early this month. A site for No. 7, 1,200 meters southwest of No. 2 on the crest of the fold, is now being cleared. The No. 8 is a location, 1 kilometer northwest of No. 2. Near this site a tank farm is also being constructed. The initial tankage now being erected will consist of three 55,000-bbl. tanks. The No. 9 is a location 1,300 meters northeast of No. 1.

No final conclusions have been arrived at as a result of the drilling in this area. It is anticipated that test drilling will continue in this section throughout 1935. The drilling to date has been

on the broad anticline of the east flank having an average dip of 5 to 7 degrees. The west flank has a vertical dip. The length of the North Dome is 10 kilometers with an indicated width of 4 kilometers.

Rio De Oro Area

Work is being rushed now in order to start drilling operations in the Rio de Oro area in the north end of the concession by next spring. The site of No. 2 Oro, which will be the first test to be drilled in that section by the Colombian company, has been selected as shown on the map. The site is about 12 kilometers from the Rio de Oro and Rosario Field wells which were drilled in Colon on the Venezuela side by the Colorn Oil Corp. several years ago. The Doherty test previously mentioned, which was the only test drilled on the Barco concession previous to 1933, was located near the Rio de Oro camp shown on map. This was known as No. 1 Rio de Oro and failed to secure oil in commercial quantities.

Supplies for this Rio de Oro operation are brought up the Rio Catatumbo from Venezuela to Puerto Barco, which has been established as a port of entry for the concession by Colombia. The location of the No. 2 Oro is 3.5 kilometers west of this port of entry and 6.5 kilometers by road. The building of this highway has been one of the most difficult and expensive construction problems so far encountered in the Barco operations. The highway which will be completed in the spring passes through a heavily wooded and broken country where some of the formations outcrop. When it is completed it might be termed a "skyline drive," whose users unfortunately will be compelled to spend their time guarding against possible attacks from unfriendly Indians rather than enjoying the scenery of a jungle country.

These Indians belong to the Motilone tribe and they have given considerable trouble in both the La Petrolea and Rio de Oro areas. Using a bow and arrow they have injured or killed several native workmen and their marauding activities have resulted in a substantial property loss to the enemy.

It is a policy of the company not to harm these Indians in any way, hoping eventually to establish friendly relations which will be especially desirable should the Barco develop into a major oil operation. A recent happening, however, may complicate these efforts in the immeditae future. In a raid on a camp, the Indians included in their loot 300 dynamite caps which were to be used in connection with highway construction. These caps are easily exploded and it is feared that should they unwittingly be set off and injuries result that the aborigines will come to the conclusion that a trap was set for them and they will make special efforts to retaliate. In order to protect workmen from possible attacks by these Indians it has been necessary to employ one guard for every five workmen in building the highway from Puerto Barco to the site of No. 2 Oro. Guards are regularly employed at all camps.

The No. 2 Oro is located on the crest of the fold of the Rio de Oro structure. There are seepages of heavy oil near the location. At 400 meters from the location there is an outcropping of a 7-foot bed of coal and this will furnish fuel for the drilling of the first wells. It is anticipated that heavy oil will be used as fuel in the drilling of additional tests.

Permanent Camps

To provide living conditions suitable for white people in this country, large expenditures in camp facilities have been necessary. Colombia labor is used as much as possible in construction work. Even in the case of these men, greater outlays are necessary to secure suitable food than is paid out in wages. Because it is not possible to transport all the food requirements from Venezuela, the company is endeavoring to develop food supplies. Near Puerto Barco for example, the company has set out 5,000 plan-ton, which produces a cooking banana, and large quantities of yuca, a starch root highly prized as food in that section. Large numbers of cattle are also maintained on the plains near Puerto Barco to furnish meat.

One of the most difficult jobs of the Barco development in Colombia has been the construction of a 6.5 kilometer road extending from Puerto Barco on the Rio Catatumbo to the site of the Oro No. 2 where the first test by the Colombian Petroleum Co. will start drilling in the spring of 1935

Manchester Now Second Oil Port in England

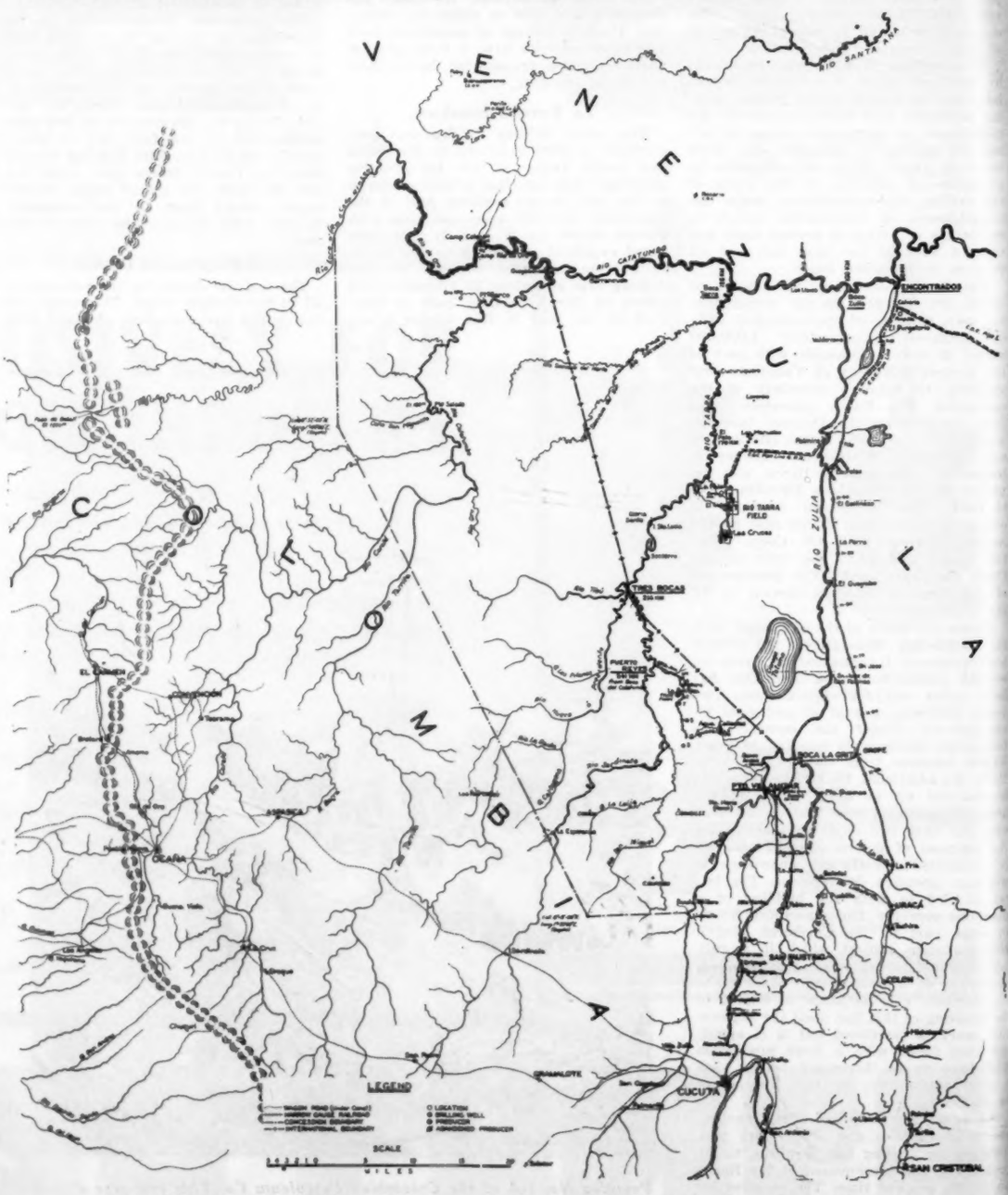
George M. Massey, representing the Manchester (England) Ship Canal Co., writes that developments continue at the great oil depot in the Manchester Ship Canal, "Ellesmere Port."

Starting with the handling of tanks in 1897, the new technique in the handling of oil was inaugurated in the port of Manchester and with the building of the great oil docks at Stanlow (adjoining the Manchester Ship Canal Harbor Works at Ellesmere Port), the shipments of oil have steadily increased until the port of Manchester is now the second oil port in the kingdom, second only to London, and has 234 tanks with a total storage capacity of 118,000,000 gallons.

The newest development is the oil refinery built for Lobitos Oilfields, Ltd., at Ellesmere Port.

The refinery occupies a site of 20 acres near the canal, and the company has acquired an option upon another 20 acres of land for possible extensions.

Present output capacity is estimated at 100,000 tons of oil a year. The unit is a full-range, straight distillation plant, and in one operation benzene, kerosene, gas-oil, lubricating oils and bitumen residue are obtained.



Map showing location of Barco concession in Colombia and points of operation

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U.S.S.R.

Production From Fields of Russia Will Probably Show Twelve Per Cent Gain

With an estimated crude oil production of 24,000,000 metric tons for 1934 the U.S.S.R. will show again of approximately 12 per cent over 1933. The consistent month to month increase during 1934 over 1933 until October marked a recovery from the slump of early 1933 in which all phases of oil operations in the U.S.S.R. ran behind in 1932. During the latter part of 1933 there was a general improvement in operations especially in the production of crude oil and this accounts for the fact that the increases this fall over the fall of 1933 have been less than those shown earlier in the year. The October crude oil production in fact was slightly less than in October, 1933, for the first time this year.

The crude oil production, drilling and refinery operations are summarized for October, September and the first 10 months of 1934 giving comparisons with 1933 and per cent of government plan, in the accompanying table. Elsewhere in this issue the outstanding developments in production and refining are reviewed by those in daily touch with Russian operations with plans for future expansion.

These data show in detail the expansion that has taken place this year but they also reflect the fact these operations are running behind the government plan with a quick expansion necessary if the 1935 plan is to be carried out. The oil administration in the U.S.S.R. like that governing all other industries is now completing the second year of what has been called the Second Five Year Plan. It has been necessary to revise the plan for oil downward since it was first announced in 1932 and it is probable that additional revisions will be necessary if they expect those in charge of operations to approximate the program for 1935 and the remaining three years.

Government Plan

No phase of the Soviet plans, however, is receiving more consideration from governmental leaders than the production of crude petroleum and the manufacture of petroleum products and recent activities on the part of the petroleum administration indicate that every effort will be made to show a greater expansion in operations during 1935 than has taken place in the year now being brought to a close. One official of the government said several years ago, "We will expand as our oil industry expands," and present political leaders are giving every assistance to those directly in charge of the oil administration. The country needs the oil as fuel for new industries, for national defense, to take care of an increasing demand for illumination and power and to strengthen its export position.

Need New Equipment

The principal need now is for heavy machinery in the fields and modern refinery equipment. The Soviet have made progress in manufacturing their own oil field and refinery equipment including the perfection of scientific instruments. This development of home manufacturing facilities has not kept pace with the demands of the oil industry and those connected with various phases of operations in the U.S.S.R., are authority for the statement that this situaion is largely responsible for the fact that the production of crude petroleum and refinery products did not keep pace with the government program. Recognizing this condition, the heads of the various operating trusts have indicated their willingness to purchase equipment from manufacturers in other countries to be used in all phases of their operations.

In this connection approximately 20 engineers representing the various trusts and the general petroleum administration of the U.S.S.R. are in the United States at this time. Should the diplomatic negotiations now being carried on between the two countries covering settlement of debts and satisfactory credit arrangements be provided by the Export-Import Bank, it is certain that through the recommendations of these engineers, a large amount of equipment for oil field and refinery operations will be purchased during 1935. Pending settlement of these negotiations sizeable purchases have been made for immediate delivery.

Future Expansion

Indicative of the possible scope of oil field operations, the Soviet oil administration a year ago was hopeful that in 1935 the crude oil production could be increased to 42,500,000 tons. It is unlikely that this objective will be obtained during the coming year but new discoveries explained elsewhere in this issue show that this large production would be possible provided modern drilling and operating equipment was available to develop proven properties and there were sufficient transportation and refinery facilities to handle such a large output. It is commonly conceded that the known reserves in the U.S.S.R. at this time exceed those of any other country so that now the problem primarily hinges around the development of proven properties and the expansion of profitable markets, both domestic and export.

The government had hoped to expand crude oil production to 52,750,000 tons or approximately 1,000,000 bbls. daily by 1936 with 69,200,000 tons the objective in 1937 the last year of the Second Five-Year Plan.

Such a large increase in production would necessarily be accompanied by a similar expansion in refining facilities. Originally the plan called for the construction of 62 processing units including all types of crude distillation and cracking during 1934. It has not been possible to carry out this program although several new units have been installed at old and new refineries. The Soviet refinery engineers are familiar with efficient petroleum processing methods through the large number of American installations made previous to 1932. This equipment which is now partially obsolete and worn out has been supplemented with units of Soviet design and construction but the trusts which operate refineries are now anxious to install the latest American units.

1934 Operations

The present crude runs to stills of refineries of the U.S.S.R. average approximately 400,000 bbls. daily as shown in the accompanying table. This is 60,000 bbls. a day less than the crude oil production and 40,000 bbls. daily more than the average crude runs to stills in 1933. The refinery operations in relation to the government plan have shown improvement in recent months and during October the runs to stills of Azneft, the most important of the operating trusts, were 100 per cent of the plan.

Present refinery operations are not well balanced as to cracking facilities, based on standards in the United States. In this connection it will be noted from data in the table that the average yields of finished gasoline from crude oil are less than 15 per cent with a yield of kerosene of more than 22 per cent. Marketing conditions are partially responsible for this condition.

The domestic demand for gasoline is small with a relative large consumption of kerosene. In the export end it has been found easier to find markets for kerosene than gasoline. Most of the Russian crudes are suitable for refining the best grades of kerosene and this fact also tends to stress the importance of having equipment for the manufacture of that product.

The U.S.S.R. refineries have increased their production of lubricating oils and wax over the past year. Greater quantities have been consumed in domestic markets and exports also have increased. Russian wax has become a factor in the markets of several countries in North and South America.

Large Gain in Drilling

Drilling in the U.S.S.R. has shown an increase of approximately 50 per cent this year over 1933. Drilling for 1934 will probably total at least 1,250,000 meters or better than 4,000,000 feet. Figured at an average depth of 3,000 feet this would mean the drilling of 1,350 wells. The drilling figures include the deepening of old wells as well as the drilling of new tests. As shown in the table the drilling in wildcat areas during 1934 has been only about 50 per cent of the government plan.

PRELIMINARY FIGURES FOR OCTOBER, 1934, AND REVISED FIGURES FOR SEPTEMBER, 1934

PRODUCTION OF CRUDE OIL

	Oct., 1934	% of plan	Sept., 1934	Oct., 1933	10 months, 1934	% of plan	10 months, 1933	1934 % of 1933
Azneft	1,631,700	100.4	1,607,500	1,599,700	15,782,300	83.1	12,442,400	126.8
Grozneft	239,800	55.5	241,200	377,700	2,938,700	49.0	4,196,600	70.0
Mainefl	95,000	99.0	76,100	58,700	747,300	84.6	506,000	147.7
Embaneft	20,700	73.9	19,200	15,600	197,400	47.0	165,800	119.1
Other trusts	40,700	54.0	44,700	31,600	336,200	29.4	404,600	82.7
Total	2,077,900	89.9	1,990,700	2,083,300	20,001,900	73.4	17,717,400	112.9

DRILLING (in meters)

Azneft	61,806	82.7	56,457	57,390	671,338	77.7	430,646	155.9
Grozneft	18,254	87.3	19,799	18,363	212,588	70.9	111,907	189.9
Mainefl	4,224	71.6	6,686	3,819	48,762	65.9	35,594	137.0
Embaneft	5,117	96.5	4,666	2,943	40,201	50.3	32,454	123.9
Other trusts	7,304	57.6	8,907	8,669	98,159	53.9	77,380	126.8
Total	96,705	80.9	96,515	91,184	1,071,048	71.4	687,981	155.7
Consisting of:								
Production drilling	67,543	84.9	66,422	68,422	739,915	71.9	463,508	159.4
Wildcatting in producing fields	18,597	86.2	19,142	11,995	201,813	80.8	126,295	159.8
Wildcatting in new areas	10,565	57.5	10,950	10,767	130,215	58.7	98,178	132.6

RUNS TO STILLS

Azneft	1,156,900	100.5	1,131,700	1,101,700	11,306,300	87.0	10,265,200	110.1
Grozneft	497,400	68.3	559,900	528,000	5,875,700	61.0	5,022,400	117.0
Aviafuel	26,300	87.9	33,000	26,300	228,200	67.7	240,600	94.8
Sredazneft	4,600	65.7	3,900	3,700	35,900	32.6	34,500	103.2
Total	1,685,700	87.9	1,728,500	1,659,700	17,446,100	75.6	15,563,000	112.1

PRODUCTION OF GASOLINE

Azneft	97,600	99.4	97,400	84,800	990,800	89.4	806,300	122.9
Grozneft	134,700	79.7	128,400	161,700	1,384,300	76.9	1,469,300	94.2
Aviafuel	11,900	71.7	9,200	3,000	45,300	31.2	21,800	207.8
Sredazneft	500	55.6	400	400	3,700	41.6	2,900	127.6
Deduct inter-refinery transfers	1,900	....	4,300	.....	101,100	....	.....	....
Total	242,800	87.1	231,100	249,900	2,323,000	77.4	2,300,300	101.0

PRODUCTION OF KEROSENE

Azneft	249,600	96.3	232,600	217,100	2,607,600	89.3	2,154,300	121.0
Grozneft	117,300	65.1	128,100	117,200	1,419,800	55.4	1,071,500	132.5
Aviafuel	5,700	118.8	6,200	3,900	42,000	87.3	27,300	154.4
Sredazneft	600	54.5	600	500	4,500	23.0	3,600	125.0
Deduct refinery transfers	.....	....	900	.....	314,900	....	.....	....
Total	373,700	83.3	356,600	338,700	3,759,000	75.7	3,256,600	115.4

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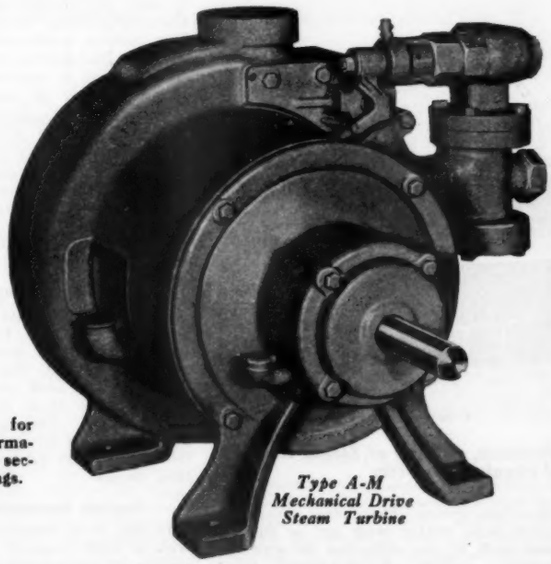

Type A-M Mechanical Drive Steam Turbine

Write NOW for detailed information, including sectional drawings.

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Refer to foreign translations of these units in this issue.

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SHULL improved PERFORATORS

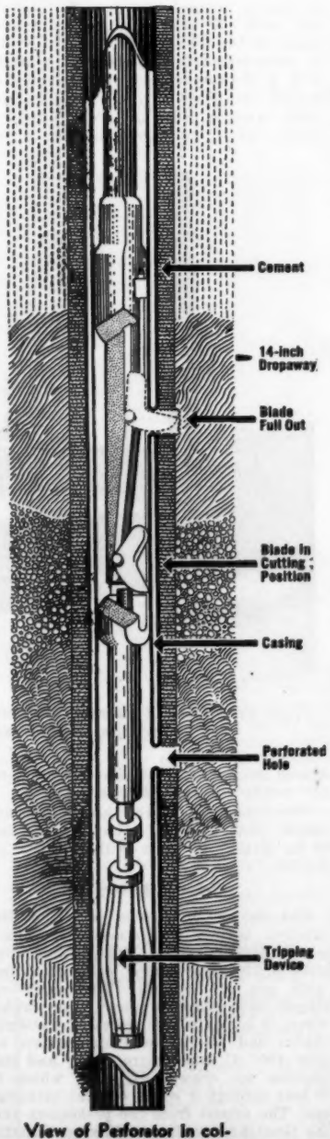
Two types of Shull Casing Perforators have proven extremely successful. Perforations can be accurately punched in the casing in the well without danger of collapsation or weakening of the casing. Perforations can be punched singly with one type or in multiple with the second type,—one, two or three holes at a time.

3-ROW PERFORATOR (at right)

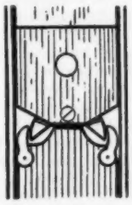
This tool permits multiple perforations with equally divided holes throughout each length of casing. Instead of using an L-shaped blade, the 3-row Perforator is equipped with wheel knives. It can be operated with one, two or three knives. Any distancing of holes can be arranged. This Perforator can be used on a string of tubing or drill pipe or can be operated by the cable tool method. Spacing of perforations is uniform, regardless of spiralling. Made in all sizes to accommodate any casing. Fully described in our catalog.

1 and 2-STRING PERFORATOR (at left)

This tool is equipped with extra-long knife to penetrate the heaviest casing with absolute precision. Inclined channels provide a positive operation of the cutting blade and a direct clean punch which forces the blade, shear-like, through single or double casing, penetrating through the cement. No driving-down action on blade after it has penetrated the casing. Will not rip casing or perforate a larger hole than intended.



View of Perforator in collapsed position, with dotted lines showing blade in cutting position.



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RUMANIA

Refinery of Steaua Romana at Campina Processes Oil From Various Fields

By ENGINEERING DEPARTMENT, REFINERY
Steaua Romana Societe Anonyme pour l' Industrie du Petrole

The refinery of Steaua Romana at Campina, Rumania, occupies an area of 12 acres situated at the Campina-Doftana railway line about 90 kilometers to the north of Bucharest.

The average working capacity of this plant is 4,600 tons (approximately 32,000 bbls.) of crude oil in 24 hours. The crude oil processed comes from the various oil fields. These are: Campina, Bustenari, Moreni, Ceptura, Aricesti, Boldesti, etc., and the crude is pumped to the refinery through pipe lines, being first stored in tanks in order to separate it from water and impurities and if necessary a desemulsification is effected by using different chemical processes.

For the distillation of the crude oil the refinery possesses three different plants.

The oldest one is the continuous plant composed of 16 shell stills which are heated by direct firing with fuel oil or by gases coming from the oil fields of Moreni and Aricesti. The crude oil is first pumped through two vertical residue preheaters of about 670 tons capacity, where it is heated up by employing topped crude of the last still, thus withdrawing also the water and impurities contained therein. From here the crude is sent through 16 horizontal preheaters, receiving an increase in temperature by the vapors from the stills and then passing from one still to the next by gravity.

The crude is distilled by direct firing and by the aid of superheated steam of 270° F. The distillate vapors, after passing through the preheaters, are condensed in water coolers. Finally the products go through the receiving boxes in various fractions to the receiving tanks. The products obtained in this plant are: Raw naphtha; different kinds of kerosene; gas-oil, and fuel oil as residue. The working capacity is about 1,300 tons in 24 hours.

The raw naphtha has to be rerun in the continuous benzene rectification plant. This is composed of eight insulated stills, heated by superheated steam, which circulates in pipe coils. Each still has its Heckmann rectifying column, from where the gases pass through the dephlegmators, which at the same time are serving as preheaters for the raw naphtha, and lastly the distillate passes through the water condensers. The fractions are light benzene and heavy benzene.

The residue is redistilled in the white spirit distillation plant. Normally the residue is pumped continuously from the last still of the benzine rectification plant to the white spirit battery, which is composed of four stills, each equipped with a Heckmann rectifying column and heated by direct firing. The charging stock arrives with a temperature of about 140° C. at this plant and is preheated by means of distillate vapors and the residue of the white spirit plant.

The products are two kinds of white spirits and a residue, which is disposed of by mixing it either with kerosene or gas oil.

Second Battery

The second continuous crude oil distillation battery has atmospheric boxes with "Allan" system. This plant consists of 10 stills, heated by direct firing with gas or fuel oil. The crude oil passes first through three high tanks, where it is heated by means of distillate vapors and residue to a temperature of over 100° C. and where water and impurities are drawn off, after which it is sent through a series of heat exchangers. The vapors from the preheaters and the first three stills are directed through a rectification system with atmospheric boxes.

Workshop of the Campina, Rumania, refinery of Steaua Romana, employing 300 men. All repair work is done in this shop and much of the equipment is built here

The battery distills paraffin base crude oil up to about 10 per cent residue (tar). The working capacity of this plant is 900 tons in the course of 24 hours. The paraffin oils are worked up to wax in the paraffin wax manufacturing plant, mentioned below.

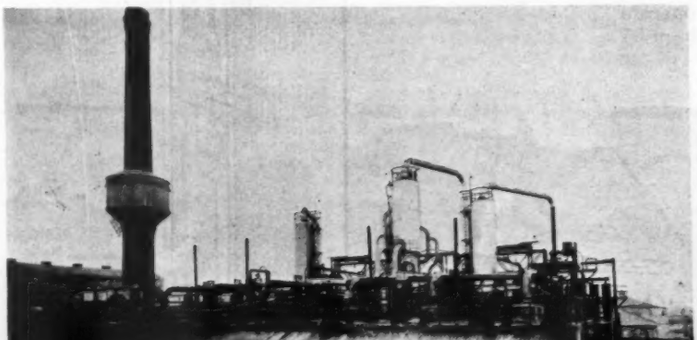
Stratford System

The third battery consists of two crude oil distillation plants with oil circulation system according to the C. W. Stratford system. Each plant consists of three stills heated with gas or fuel oil and each of the stills has its own circulation system. A centrifugal pump draws the crude oil from the bottom of the still and pumps it back with a pressure of about 1.6 kg./cm.² through 900 nozzles against the two firing tubes of the still, in this manner obtaining a very good heat exchange (capacity of the pump is 650 tons/hour).

In the first still only light benzene is drawn out, the residue passing in equal quantities to the other two stills, where it is distilled off to fuel oil. The vapors are fracionated in three bubble towers; light and heavy benzene distill as vapors overhead, while kerosene and gas oil are taken off the plates at various heights. The mixture of heavy benzene and white spirit is rectified once more in another bubble tower. All the towers are equipped with reflux centrifugal pumps. The temperatures and levels are everywhere automatically controlled.

The products obtained are distillates, light benzine, heavy benzine, white spirit, different kinds of kerosene, gas oil, and as residue fuel oil.

All the centrifugal pumps are actionated by electrical motors. The two sister plants have a consumption of electrical energy of about 10,000 k.w. hours a day. The working capacity of each plant is 1,200 tons in 24 hours.



Crude distillation battery at Campina, Rumania, refinery of Steaua Romana incorporating Stratford circulating system

Vacuum Distillation Plant

The lubricating oils are obtained by distillation of asphalt base residue oils under a vacuum of 85 per cent atmospheric pressure. This plant is composed of eight stills of 30 tons filling capacity, the system being "Porges-Steinschneider." The vacuum is effected by two vacuum pumps. The lighter fractions are neutralized with a solution of caustic soda before reaching the receiving tanks.

The working capacity is 260 tons of residue oil in 24 hours. In a special plant, consisting of three stills, lubricating oil distillates are concentrated for obtaining special qualities. All the various kinds of lubricating oils are manufactured from residue oils extracted from asphalt base crude oils and never from blue oils of the wax filter presses.

Oil Refining Plant

The lubricating oils are refined with sulphuric acid and neutralized with a solution of caustic soda. There are two agitators, of 70 tons filling capacity each, for the acid treatment and four of about the same dimensions for the neutralization. The agitation is effected by the blowing in of air. The acid and the caustic soda solution are handled by blow drums.

Asphalt Manufacturing Plant

In this plant, composed of seven stills with a total capacity of 115 tons, the residue of the lubricating oil distillation plant is transformed into asphalt of different qualities by blowing in air at a temperature of 300° C.

Working capacity is 80 tons in 24 hours. The iron drums, in which the asphalt is shipped, are made at a special workshop, installed for this purpose. The output averages 500 drums, constructed of iron plate of 0.4-0.6 m./m. in eight hours.

Cracking Plant

The refinery has three Dubbs cracking units with two reaction chambers; units 1 and 2 together make use of only one chamber. These two units are equipped with Universal Oil Products Co. convexion furnaces with a flue gas recirculating system; the third unit with

DEEPEST TEST IN RUMANIA

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a Foster Wheeler radiation furnace with air preheating.

All the three units are operating always on a heavy liquid residue by flashing. The duration of a run is normally 30 days. The P.D. gases are rectified at 3½ kg./cm.² pressure in bubble towers of the Badger system. They are refined with fuller's earth in the Gray towers. There exist also special towers for separating the polymers.

The working capacity of the three cracking units together is 680 tons of charging stock per day. In order to obtain good doctor and corrosion tests, the gasoline from the Gray towers is treated afterwards with Na-plumbite and sulphur in a special installation.

Benzine and chemicals are mixed in orifice mixers and then washed with water in the set-down tanks.

Refining of Kerosenes

The kerosene and white spirit distillates from the various crude oil working plants are treated with sulphuric acid and neutralized with a solution of caustic soda. For the acid treatment there are eight large agitators and four others for the neutralizing process. The mixing is effected by blowing in of air. There is no treating with bleaching earths, neither for the lubricating nor the lighting oils (kerosenes).

Paraffin Wax Plant

For chilling the paraffin distillate an ammonia compression plant has been installed consisting of one double, electrically driven compressor for 300,000 calories per hour at —10° C.; one double and one single compressor, with 260,000 calories per hour at —10° C., driven by a 300-horsepower horizontal steam engine, which supplies also the necessary power for driving nearly all the other machinery of the wax plant.

The oil is chilled at 0.1 to —5° C. in 10 crystallizers of Porges-Neumann system and filtered partly in four 50-plate Craig filter presses, at an end pressure of 35 kg./per sq. cm.; the rest in twenty 60-plate filter presses at a pressure of 8 kg./cm.². The oily scales of these latter presses has to be recrystallized in three other crystallizers and then filtered at +18+20° C. in three 100-plate filter presses at 10 kg./cm.² pressure.

The sweating of the hard scale taken out from the presses is effected in: (1) Sweating chambers Brunn-Koenigsfelder-Maschinenfabrik; (2) sweating chambers of the Henderson-Groeling system; and (3) four sweating stoves system "Alanmor."

The products are 52 per cent ready raw wax and 48 per cent foot oil. The foot oil is recrystallized with the oily scales described above.

The wax is acid treated in two agitators of a total capacity of 26 tons and neutralized and bleached with decolorizing clay in two other ones. The mixing is effected by carbon filtered air, whereupon the filtering process is continued by a 36-plate press. After handling it in this way the finished wax is run into 2 kg. and 6 kg. pans placed on shelves.

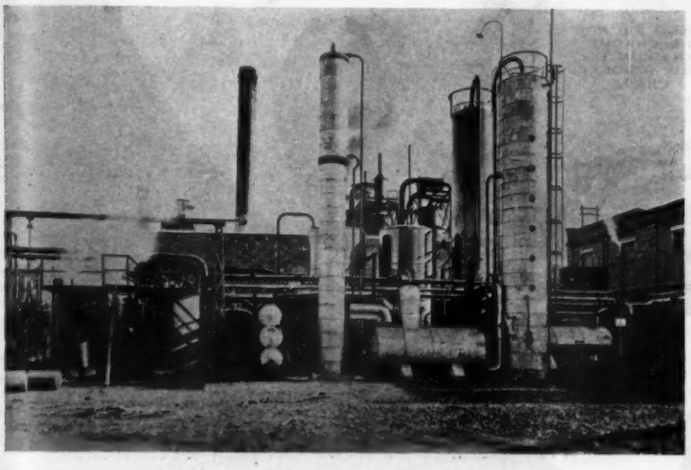
The ordinary working capacity of the wax manufacturing plant is 750 tons of finished wax per month.

Gasoline Absorption Plant

All the receiving and storage tanks for crude oil and benzene are gas-tight and connected with a gasoline absorption plant by a system of pipe lines. Four rotary compressors are sucking the gases from the tanks and then pressing them by air of 2 kg./cm.² gas coolers through the absorption plant, there they are met by other gases, coming under their own pressure, from the Dubbs cracking plant.

The gases are first cooled down, then washed in lime milk, the gasoline being absorbed with gas oil. The lean gases are led back into the refinery under a pressure of 0.3 atmosphere and used up together with those coming from the oil fields. During the hot months, about 40 tons of stabilized gasoline is produced every day; in winter only half of that quantity.

The gasoline is extracted from the gas oils by means of superheated steam, condensed and after these proceedings the crude gasoline, extracted in this manner, is concentrated by means of a stabilizer, this completing the process of the trade gasoline.



Gasoline absorption plant at Campina, Rumania, refinery of Steaua Romana

Central Pump House

The refinery accounts for 13 steam driven pumps for handling the various products. For the mixing in the agitators, for handling acid and caustic soda solution and for clearing the pipe lines there are three electrically driven and one steam driven air compressor. Besides these, there is another station with four electrically driven compressors in the draftworks of the lubricating oil distilling plant.

General Laboratory

A special department is established for controlling all finished products before leaving the refinery and another one for the research and study of new methods, of working processes and for controlling all the materials entering the plants.

Power Plant

There are 11 Cornwall boilers with two fire tubes, a heating surface of 120 m.², built for 8 atmosphere steam pressure and 300° C. steam temperature and 3 high pressure boilers of the Babcock-Wilcox type, having a heating surface of 500 m² and a steam pressure of 35 atmosphere.

The steam from these three boilers passes first through three turbines of 900 kw. each, leaving them with a pressure of 8 atmosphere and after uniting itself with the steam from the Cornwall boilers, is sent through several pipe lines to the various works and plants. Each pipe line is equipped with

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•

The automatic recording apparatus is enclosed in a water-tight outer case (3¼ inches O.D.) as shown to the left.

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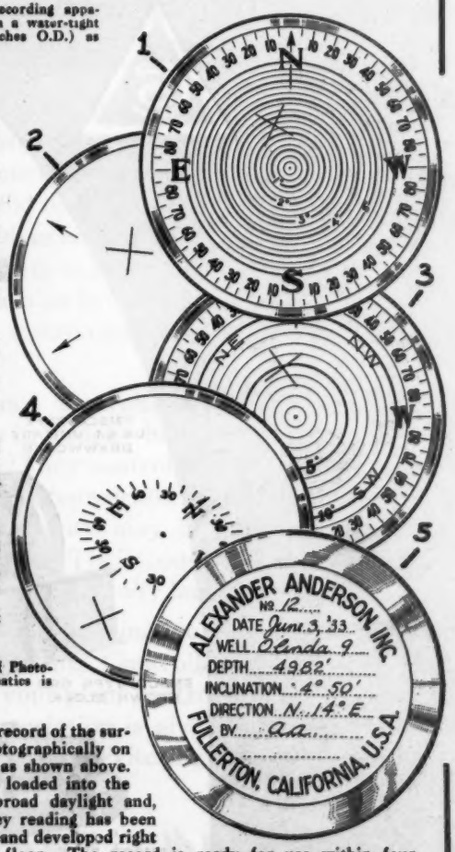
The top disc (No. 1) is for vertical wells kept below 5 degrees. The reading shown on it is inclination 2° 35'; direction N. 21° E.

No. 2 is a Code Disc giving the same reading which can only be interpreted with code readers. This is for confidential records.

No. 3 is for inclinations up to 10 degrees. The reading shown is an inclination of 4° 50' in a direction of N. 14° E.

No. 4 records inclinations up to 65 degrees. The inclination is read with a transparent reader; the direction is read directly from the disc. The reading shown is an inclination of 45° in a direction of S. 12° W.

No. 5 is the back of disc No. 3.



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No knowledge of Photography or Mathematics is required.

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A permanent record of the survey is made photographically on sensitized discs as shown above. These discs are loaded into the instrument in broad daylight and, after each survey reading has been made, unloaded and developed right on the derrick floor. The record is ready for use within four minutes after the instrument comes out of the well. Interchangeable inclination assemblies are furnished to read up to 5°, 10°, 25° and 65°. Code discs are supplied when it is desired to keep the survey records in confidential form.

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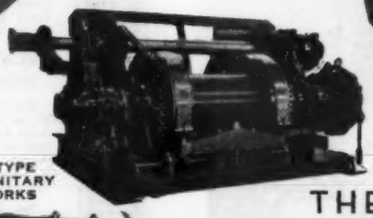

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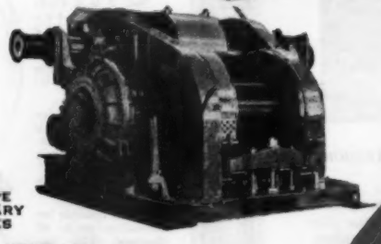

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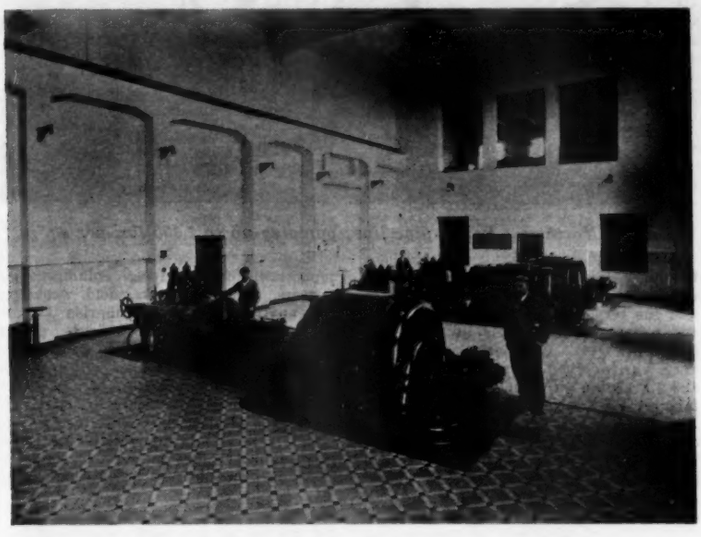
CONTINENTAL

a Ventura tube and the necessary recording instruments for measuring the quantity of steam for each plant separately. The steam consumption for the whole refinery is about 65,000 kg. per hour.

Electrical Power Station

The three steam turbines (steam expansion from 35 to 8 atmosphere) mentioned above, are coupled by aid of a helicoidal gear, which reduces the revolutions from 6,000 to 3,000 per minute, with three alternators for three-phase current of 3,150 volt tension and 50 periods per second. Two of the turbo-generators are always working, giving the necessary electrical energy for the whole refinery. Normally they are charged with 1,500 kw.



Power plant at the Campina, Rumania, refinery of Steaua Romana, consisting of steam turbine driven generators

Water Stations

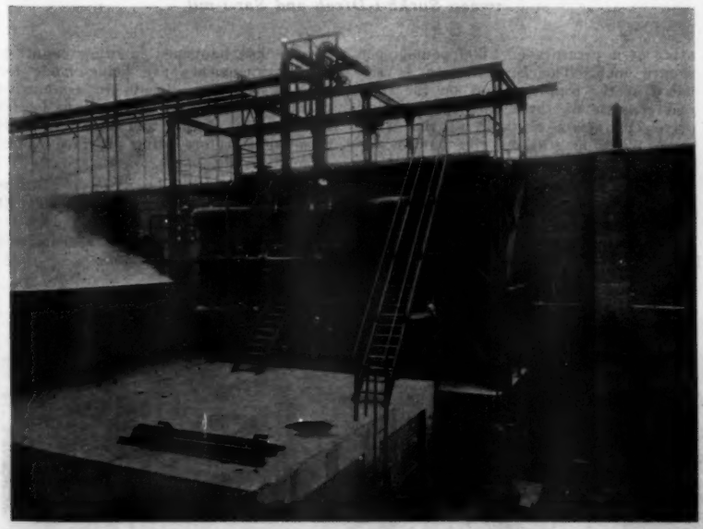
Fresh water is supplied from the River Droftana running at a distance of about 2.5 km. from the refinery. It is received in three tanks mounted around three chimney stacks at a height of 20 meters. There are two pumping stations, one near the river, for the fresh water supply, with six centrifugal pumps, each individually driven by a Diesel motor and the other one situated at a few hundred meters distance from the refinery, receiving the water from a lake, in which the warm water from the refinery is pumped back for cooling, after passing over two cooler towers. In this latter station four horizontal double plunger type pumps are installed, having a total capacity of 1,100 tons per hour and driven by four Diesel motors, the first pumping station mentioned above having 930 tons capacity per hour. The water from both the stations flows in two pipe lines, two of 20-inch diameter and one of 14-inch diameter, to the refinery. The daily consumption of water in the summer months being 3,600 tons.

General Workshops

All the repairs required in the refinery and also the smaller new constructions are executed in own workshops, where about 300 workmen are employed.

Loading Stations

For the finished products there are two storage tank farms, one near the refinery and the other at about 2 miles distance at Poiana. The products are loaded into tank wagons with the only exception of kerosene which is pumped by pipe line to Baicoi and then to Constanta, our shipping office. For dispatching the products by tank cars, the refinery possesses two loading racks, one at Campinita (refinery) and the other at Poiana. The first one having a loading capacity of 100 and the latter of 200 to 250 tank cars daily.



Clay treating towers of the Gray type operated in connection with Dubbs cracking units at Campina, Rumania, refinery of "Steaua Romana"

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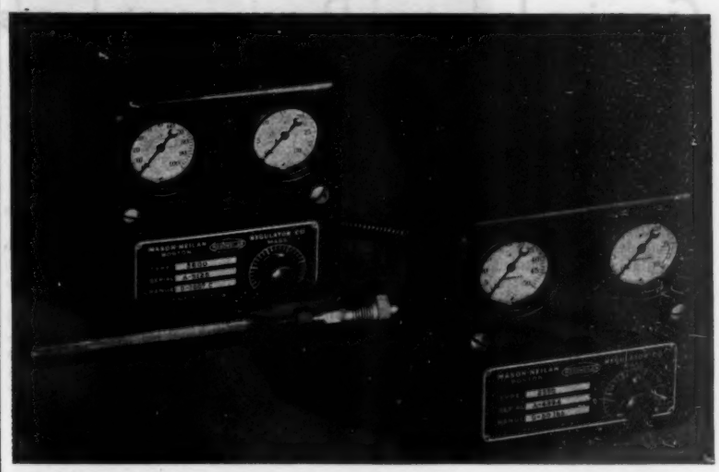

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1288

PERSIA

Growing Industrial Development Leads to Increased Demand for Products

Testing Northwest Persia pipe line; pumping up to 2,300 lbs. per sq. in.

The industrial development taking place in Persia has resulted in an increased demand for petroleum products, particularly petrol and kerosene. Hitherto there has been difficulty in supplying north and northwest Persia with indigenous products from the Anglo-Persian Oil Co.'s refinery at Abadan on the Persian Gulf on account of the long and difficult road journey through Persia. For the purpose of meeting the requirements of northern Persia the company is now erecting a refinery near the town of Kermanshah to deal with the production derived from their Naft-i-Shah Field. This scheme was envisaged in the new concession negotiated by the company with the Persian government in 1933.

A labor parade near the Northwest Persian pipe line at Kermanshah

Production

The producing field is divided by the international frontier between Persia and Iraq and is approximately 80 miles northeast of Baghdad. On the Iraq side it is known as Naft Khaneh and on the Persian side as Naft-i-Shah.

Although the field is divided by the frontier, it is being developed on unit production lines.

The Naft-i-Shah Field is approximately 50 miles south of Qasr-i-Shirin. Two wells have been drilled, one of which is completed and is ready to connect up for production; a third well is now being drilled.

The crude oil will be passed through a gas separator and carried by its own pressure to the topping plant, the main units of which comprise pipe still, fractionating column, condenser, receiver and storage tanks. The different gravity oils will be separated out and pumped to storage, being subsequently withdrawn for pumping into the pipe line in the proportions required by the market. The scheme will, it is believed, be unique in oil field practice in that the crude oil will be treated at the topping plant and only a mixture of the products necessary to meet market requirements will be sent forward to the refinery for further treatment there.

The auxiliary services in the area include Lancashire boilers for steam raising, power house (having a steam driven electric generator) and a Braun cooling tower; there will also be stores, workships, garage, works, dispensary, office and housing accommodation for the staff employed in the area.

Pipe Line

A 3-inch line will carry the distillate from the field at Naft-i-Shah to the Kermanshah refinery—a distance of approximately 145 miles.

The pipe line route runs through very broken country, rising at one point to an elevation of 5,000 feet above sea level, and the terminus of the pipe line where the refinery is located is at 4,000 feet above sea level. Weather conditions are very varied, temperatures from 0° to 120° F. being experienced, while heavy falls of snow occur during the winter.

The line is electrically welded throughout and is coated with bitumen and wrapped before being buried. There are four pumping stations on the line operating at a pressure of 1,500 pounds per square inch. The first station is situated at the topping plant on the field and consists of three ram type pumps driven by steam engines; at the other three pumping stations the pumps are of the same type but are driven by Diesel engines.

Welding pipe line in Northwest Persia in the valley above Pa yi Tag between Surkh-i-Dizeh and Sar-i-mil

Refinery

The site of the refinery is approximately 2½ miles east of the town of Kermanshah. The main units comprise pipe still, fractionating column, condensers, receiving tanks, acid washery; the auxiliary services comprise Lancashire boilers, stores, offices, power plant (Diesel driven electric generator).

The demand for packed oil products will be met by the output of a tin factory capable of manufacturing and filling 8,000 tins, each containing 4 Imperial gallons approximately per day. Eventually the demand for packed products will no doubt give way to bulk samples as has happened in other countries and arrangements are being made for bulk distribution depots in connection with which a fleet of large tank-lorries will operate. Garage and workshop facilities are therefore being provided on an adequate scale.

The whole scheme has been designed to deal with a throughput of 20,000,000 gallons per annum (570,000 bbls.).

It is anticipated that the scheme will be in operation by the summer of 1935.

Panoramic view of the properties of the International Petroleum Co. Ltd., at Talara, Peru. Refinery on right

RUMANIA

Increase in Crude Oil Production and Drilling During First Nine Months of the Year

Rumania showed an increase of 14.3 per cent in crude oil production during the first nine months of the year over the corresponding period of 1933, and 60.3 per cent in the case of drilling. Owing to the large proportion of wildcat drilling the Moniteur du Petrole Roumain reports the quantity of crude obtained per meter drilled has fallen from 33 to 22 tons. The daily average in the nine months has risen, however, to 22,829 tons, compared with 19,971 tons last year, but during the first five months of 1933 the Rumanian output was limited by international agreement to 18,500 tons daily.

Rumanian production has risen to 6,232,268 tons from 5,452,131 tons, an increase of 780,137 tons, and drilling to 282,405 meters from 178,490 meters, the activities of the principal companies being:

	Jan. to Sept., 1934		Jan. to Sept., 1933	
	Tons	Meters	Tons	Meters
Astra-Romana	1,279,234	54,104	1,003,266	19,487
Steaua Romana	884,416	40,746	825,116	24,665
Concordia	864,208	21,638	764,368	15,355
Romana-Americana	784,363	17,850	420,330	12,062
Unirea (Phoenix)	660,455	46,247	563,626	24,590
Prahova	442,003	14,308	268,711	9,378
Creditul Minier	291,336	29,025	392,730	14,632
Colombia	227,763	13,141	228,732	6,938
I.R.D.P.	145,965	2,067	108,321	2,589

The position as to values has been unsatisfactory. The rise in output has been a vain effort to compensate for lower export values based on world prices and for the excessive internal taxes levied on the industry.

Astra Romana has increased its share of the total Rumanian output to 20.5 from 18.4 per cent, and Romana-Americana to 12 from 7.7 per cent. Unirea's proportion is up slightly (10.6 from 10.4 per cent), and Concordia is practically unchanged at 14 per cent, but that of Steaua Romana has fallen to 14.2 from 15.2 per cent. Among the smaller concerns Prahova's rise to 7.1 from 4.9 per cent is outstanding.

Stocks of crude oil on the fields and at pumping stations increased from 117,636 tons at the end of September, 1933, to 228,901 tons on September 30.

The increased drilling activity and production at Rasvad-Viforata, Boldesti and Aricesti are noticeable.

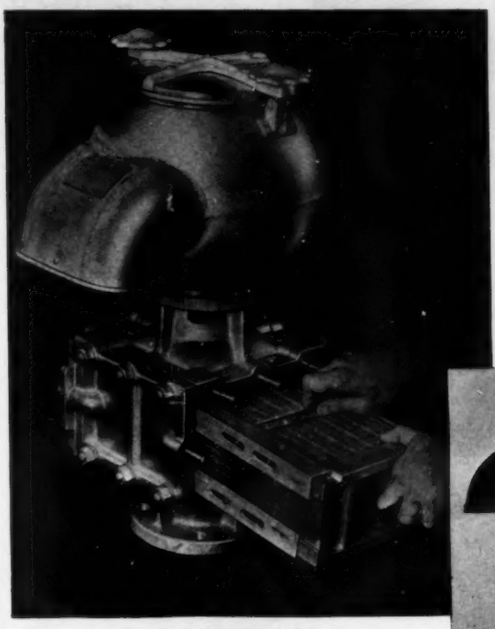
The following table sums up production and drilling in the fields:

	Jan. to Sept., 1934		Jan. to Sept., 1933	
	Tons	Meters	Tons	Meters
Dambovitza—				
Gura-Ocnitzei	2,431,437	82,672	2,511,605	88,628
Rasvad-Viforata	404,957	52,343	.....	.....
Others	416,596	42,436	471,784	19,946
Total	3,252,990	177,451	2,983,389	108,574
Prahova—				
Boldesti	1,016,142	49,115	657,555	15,845
Moreni-Plecuri	894,785	17,093	910,408	14,677
Ceptura	321,627	1,270	325,329	3,568
Aricesti	284,538	15,064	81,903	23,508
Runcu-Scorteni	142,869	8,276	150,299	7,567
Others	243,856	12,255	249,884	1,264
Total	2,893,817	103,073	2,375,378	66,429
Buzau	45,321	765	50,135	34
Bacau	40,140	517	43,239	742
Neamt	.....	599	.....	398

Pleasant Quarters in Sumatra Field

A section of employes' houses in the Soengei Gerong refinery. Moesi River in background, with tennis courts and swimming pool in center and right center, respectively. N.V. Nederlandsche Koloniale Petroleum Maatschappij, subsidiary of Standard Vacuum Oil Co.

REMOVABLE, TELESCOPIC FLAME ARRESTER BANKS ARE EXCLUSIVE WITH "VAREC" *TANK VENT UNITS*



COVERED BY PATENT NO. 1918337 and Patents Pending

VAREC TANK EQUIPMENT

The "Varec" Conservation Vent Unit incorporates a flame arrester bank that opens like a book. For inspection, simply remove cover plate and pull out the bank, which may then be expanded to a predetermined stop. This feature eliminates the necessity of steam jetting or taking the bank apart to clean plates. Scores of users testify to the simplicity, positive action and time saving advantages of maintaining the "Varec" flame arrester bank.

The "Varec" Vent Unit itself is light in weight, built of rigid pure aluminum and duralumin throughout. It is fully stream-lined for maximum flow capacity and its materials assure non-corrosion.

"Varec" 6" aluminum tank vent units are the only ones listed by the Underwriters' Laboratory. "Varec" entrainment separator flame arrester is alone listed by the Underwriters' for installation in the enclosed area between vent valve and tank, the only logical location.

All "Varec" construction and features are fully covered by patents pending. Write for full information and prices on the new "Varec" Conservation Vent Unit, available in standard sizes.

Flame Arresters should beinstalled EXACTLY as they are listed by the Underwriters' Laboratories - see pages 16 and 17, Underwriters' Laboratories July 1934 List.

Varec Features: Stream-lined for maximum flow. Hyperbolic valves and seats control "blow-down" and afford greater gas conservation. Non-chattering valves and removable seats. Aluminum, duralumin, non-corrosive construction. Manufactured by an organization of practical, progressive engineers with years of experience in the petroleum field.

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Stoody Self-hardening, Stoodite, Borium and Borod—all were developed for oil field applications and all have stood the test of time.

And the Stoody Company has been telling welders, through FUSION FACTS pages since 1927, of all new developments in products and methods of welding drilling tools.

FUSION FACTS has passed its seventh birthday. For seven years this little magazine has been carrying interesting messages about welding and hard-surfacing to welders everywhere. Every so often a truck load of FUSION FACTS is sent to the post office for distribution to welders and those interested in welding in every part of the world where welding is done. Many welders have stated that they obtain more welding information from FUSION FACTS than from any other source.

If you would keep up with the latest methods of reclaiming and hard-surfacing oil field and other equipment, write for FUSION FACTS. Your name will be placed on the regular mailing list without cost to you.

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The Edward Valve & Manufacturing Co., Inc.
EAST CHICAGO, INDIANA

MEXICO

Production Reached Highest Point Since 1930 During Present Twelve Months

By PETROLEUM BUREAU
Department of National Economy, Mexico

The improvement which, in more than one aspect of petroleum operation in Mexico, began to be observable since the close of the year 1932, has been notably accentuated during 1934. During this year, production reached its highest point since 1930, exports registered some decidedly high figures, consumption topped anything thus far seen, and, altogether, activities in every line of oil exploitation were intensified.

Production has been steadily recovering, as is evident from the following figures:

	Cu. meters	Bbls.
1931	5,252,600	33,038,853
1932	5,215,500	32,805,496
1933	5,405,537	34,000,830
1934 (first 10 mos.)	4,994,230	31,413,707

There are probabilities of the production reaching 6,000,000 cubic meters, or over 37,500,000 bbls., by the end of the year.

Natural Gasoline

There has also been an increase in the production of natural gasoline in 1934 as compared with 1933. Up to September 30,805 cubic meters had been produced (200,055 bbls.) as against 26,602 cubic meters (167,328 bbls.) during the same length of time in 1933. The yield of natural gas, calculated at 312,802,221 cubic meters (11,046,923,236 cubic feet) for the year 1933, is likely to exceed 347,000,000 cubic meters (over 12,225,000,000 cubic feet) by the end of 1934, this likelihood being the greater by reason of the discovery of new natural gas sources in the northeast frontier region of the republic. A gas of very fine quality is also being obtained from a source discovered not long ago in northern Papantla (northern part of Veracruz), which is in the Gulf Coast petroliferous area.

Exports Increase

The following are the figures for exportation:

	Cu. meters	Bbls.
1931	3,577,621	22,503,233
1932	3,591,119	22,588,137
1933	3,501,768	22,026,121
1934 (first 10 mos.)	3,404,551	21,414,627

Total exports for 1934 will probably exceed 3,800,000 cubic metes, or 24,000,000 bbls.

The oil refineries established in Mexico have undergone enlargements and their equipment has been improved, with resultant increased output and a better quality of products. Production of derivatives:

	Cu. meters	Bbls.
1931	3,546,648	22,308,416
1932	3,805,200	23,934,708
1933	4,671,673	29,384,823
1934 (first 10 mos.)	4,428,821	27,920,184

The volume will undoubtedly exceed 5,300,000 cubic meters, or over 33,000,000 bbls., by the end of the year.

Consumption Gains

The consumption of petroleum products in Mexico has already exceeded the figures registered in previous years.

	Cu. meters	Bbls.
1931	2,239,965	14,089,380
1932	2,174,851	13,679,813
1933	2,121,638	13,345,103

The consumption for 1934 will exceed 2,353,200 cubic meters, or 14,800,000 bbls. That of gasoline, in particular, will this year be something like 300,000,000 liters, as compared with 260,035,302 for 1933 and 269,815,894 for 1932.

Mexico is anxious that the increase in the consumption of petroleum products shall continue, and that more and more uses shall be found for them, for they are indispensable for the maintenance and development of the country's communication facilities, for its industrial advance and for the placing of agriculture on an industrial footing. It is also the policy of the government to see to it that the products are sold at reasonable prices and that they are distributed in an efficient and economical manner. It was for this reason that in the act governing mercantile activities petroleum and its derivatives were included this year among the items considered as being of "necessary consumption."

The increased improvement in the country's economic condition, in line with the now obvious upturn in general, is reflected in a steady augmentation in the consumption of these derivatives in the interior.

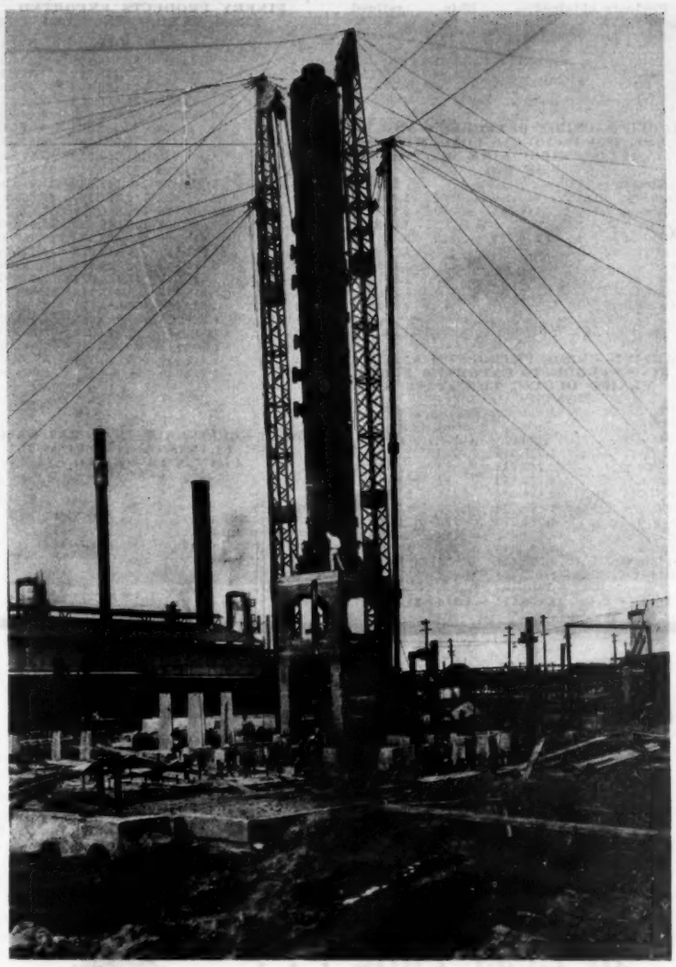
Production Expands

The number of wells that proved productive during the first 10 months of 1934 were 49; the initial total production capacity was 3,952 cubic meters (24,858 bbls.) a day; the development of these wells brought about the enlargement of some important oil fields, and there were also two further sources discovered—one of petroleum in the valley of the Panuco and Tamesi Rivers, west of Corcovado, and one of gas and petroleum in the Mier region, north of Tamaulipas. During these 10 months 219 permits for the drilling of new wells were issued, as compared with 143 in the same period in 1933.

As far as exploration and exploitation concessions are concerned, there were 136 ordinary concessions in effect on October 31, 1934, covering 2,536,077 hectares; and 1,558 confirmatory concessions, comprising an area of 7,532,619 hectares. Total number of concession titles, 1,694; total area covered, 10,068,696 hectares.

In the above connection it may be mentioned that, under the enactment governing such matters, care has been taken to see that these concessions are not converted into a device for speculation and for a sterile and injurious monopolization of resources, but that they are put to the purposes for which they have been applied for and granted.

The above data indicate that our oil industry is much better off than it was in previous years, and that its prospects are of the best. The figures for world consumption gives evidence of an obvious improvement in the more important countries, which is bringing prices up; and, as regards our own country in particular, we have already pointed out to how great an extent the consumption has risen—an increase which indeed is in line with the general upturn in conditions throughout the republic, the rapid expansion in communications, the establishment of new industries and the development of most of those already operating. There are thus good prospects that the improvements attained will not only be conserved but also exceeded in the near future.



Dubbs cracking unit under course of construction in Mexico

TABLE 1—PRODUCTIVE AND DRY WELLS DRILLED IN MEXICO THE FIRST 10 MONTHS OF 1934

Month—	No. of wells	Initial output (bbls.)	Dry wells	Total
January	6	4,969	4	10
February	3	780	10	13
March	1	151	8	9
April	6	780	7	13
May	7	2,195	7	14
June	6	1,025	9	15
July	4	1,252	9	13
August	10	4,950	5	15
September	1	2,724	7	8
October	5	6,032	8	13
Total	49	24,858	74	123

TABLE 2—WELLS DRILLED IN MEXICAN FIELDS FIRST 10 MONTHS OF 1934

Zones—	No. of wells	Output (bbls.)	Dry wells	Total
Gral Bravo (N.L.)	..	.....	4	4
China (N.L.)	..	.....	1	1
Mier (Tamps)	1	.....	...	1
Altamira (Tamps)	..	.....	1	1
Sta. Juana (Tamps)	..	.....	1	1
Cacalilao (Panuco)	6	403	8	14
Panuco (Diversos)	28	11,101	49	77
Topila	..	.....	1	1
Llano de Bustos	..	.....	1	1
Toteco	1	31	2	3
Cerro Viejo	1	252	3	4
Potrero del Llano	1	63	1	2
Poza Rica	1	2,642	...	1
El Burro (Istmo)	5	3,658	1	6
El Plan (Istmo)	5	6,698	...	5
Tecuanapa (Istmo)	..	.....	1	1
Total	49	24,858	74	123

TABLE 3—PRODUCTION OF CRUDE PETROLEUM IN MEXICO THE FIRST 10 MONTHS OF 1934

Month—	Bbls.	Value, pesos
January	3,113,707	9,678,568
February	2,863,088	8,899,110
March	3,188,923	10,108,820
April	3,206,491	10,447,298
May	2,714,825	8,956,955
June	2,918,793	10,030,472
July	3,303,055	11,322,947
August	3,434,516	11,771,113
September	3,276,612	11,227,074
October	3,393,694	11,616,342
Total	31,413,707	104,058,699
Total 1933	27,842,172	72,043,308
Increase in 1934	3,571,535	32,015,391

TABLE 4—PRODUCTION OF CRUDE PETROLEUM IN MEXICO SINCE COMMERCIAL EXPLOITATION OF FIRST WELL, WITH PART OF 1934 ESTIMATED

Year—	Bbls.	Value, pesos
1901	10,345	2,069
1902	40,200	8,040
1903	75,375	15,075
1904	125,625	25,125
1905	251,250	50,250
1906	502,500	100,300
1907	1,005,000	201,000
1908	3,932,900	786,580
1909	2,713,500	542,700
1910	3,634,080	726,816
1911	12,552,798	2,510,559
1912	16,558,215	4,139,554
1913	25,696,291	7,708,887
1914	26,235,403	7,870,621
1915	32,910,508	13,164,203
1916	40,545,712	22,300,141
1917	55,292,770	46,998,854
1918	63,828,326	89,655,859
1919	87,072,954	159,036,282
1920	157,068,678	314,137,356
1921	193,397,587	365,873,635
1922	182,278,457	351,674,938
1923	149,584,856	286,920,299
1924	139,678,294	272,084,563
1925	115,514,700	299,268,632
1926	90,420,973	225,122,242
1927	64,121,142	157,544,246
1928	50,150,610	101,946,631
1929	44,687,879	92,025,441
1930	39,529,901	80,932,254
1931	33,038,853	77,529,504
1932	32,805,496	75,687,178
1933	34,000,830	90,636,095
1934 (probable)	37,500,000	125,000,000
Total	1,736,762,008	3,271,224,929

TABLE 5—CRUDE PETROLEUM REFINED FROM JANUARY 1 TO SEPTEMBER 30, 1934, AT REFINERIES IN MEXICO

Products obtained—	Bbls.	Per cent refined
Fuel oil	15,343,996	53.6784
Gas oil	2,134,996	7.4689
Unfinished gasoline	2,212,143	7.7388
Refined gasoline	4,294,705	15.0243
Unfinished kerosene	514,868	1.8012
Refined kerosene	979,734	3.4274
Lubricating oils	351,089	1.2282
Unfinished paraffin	69,725	0.2440
Refined paraffin	89,928	0.3146
Asphalts	1,222,512	4.2767
Flux	363,637	1.2721

(Continued on Next Page)

Products obtained—	Bbls.	Per cent refined
Coke	9,510	0.0333
Sundry products	333,351	1.1662
Total	27,920,184	97 6741
Loss in refining	664,847	2.3259
Total crude refined	28,585,031	100.0000

TABLE 6—CRUDE PETROLEUM AND ITS REFINED PRODUCTS CONSUMED IN MEXICO FIRST NINE MONTHS, OF 1934

Months—			Bbls.
January			1,338,569
February	2,147,588	50	2,147,638
March			1,435,642
April	2,176,592	2,472	2,179,064
May			1,211,926
June			1,153,202
July			1,337,179
August			1,208,315
September			1,092,592
Total			11,230,191

TABLE 7—CRUDE PETROLEUM AND REFINED PRODUCTS EXPORTED FROM MEXICO DURING THE FIRST 10 MONTHS OF 1934

Month—	Mexican prod. (bbls.)	Foreign prod. (bbls.)	Total prod. (bbls.)
January	1,970,978	755	1,971,733
February	2,147,588	50	2,147,630
March	2,259,978	89	2,260,067
April	2,176,592	2,472	2,179,064
May	2,165,748	1,038	2,166,786
June	1,987,772	296	1,988,068
July	2,621,433	88	2,621,521
August	2,099,413	157	2,099,570
September	2,572,459	258	2,572,717
October	1,407,350	113	1,407,463
Total	21,409,311	5,316	21,414,627

TABLE 8—CRUDE PETROLEUM AND REFINERY PRODUCTS EXPORTED FROM MEXICO SINCE 1911

Year—	Cu. meters	Bbls.	Tons
1911	143,338	901,596	135,001
1912	1,328,843	7,729,421	1,152,235
1913	3,391,235	21,330,868	3,159,506
1914	3,714,708	23,365,513	3,456,272
1915	3,937,891	24,769,333	3,667,106
1916	4,335,354	27,268,749	4,034,884
1917	7,316,970	46,022,740	6,892,517
1918	8,230,082	51,767,219	7,677,278
1919	12,011,083	75,549,715	11,227,200
1920	23,138,378	145,508,949	21,685,945
1921	27,387,621	172,268,136	25,663,318
1922	28,754,576	180,866,282	26,958,713
1923	21,559,066	135,606,525	20,569,685
1924	20,619,998	129,699,788	19,857,917
1925	15,344,525	96,517,050	14,746,222
1926	12,833,398	80,722,073	12,329,266
1927	7,698,098	48,421,034	7,409,970
1928	5,288,103	33,262,168	5,025,973
1929	4,229,217	26,601,775	4,007,521
1930	4,266,301	26,835,033	4,001,582
1931	3,575,664	22,490,924	3,362,077
1932	3,589,851	22,580,162	3,373,037
1933	3,500,277	22,016,744	3,290,525
1934*	3,800,000	24,000,000	3,600,000

*Probable.

TABLE 9—REFINERIES, NATURAL GASOLINE PLANTS AND ASPHALT PLANTS IN MEXICO

Plants—	Daily capacity	No. of plants
Complete refineries	158,081	4
Topping plants	152,311	4
Natural gasoline plants	1,214	8
Asphalt plants	195	1
Experimental	6	0
Total	331,807	18

ARGENTINA

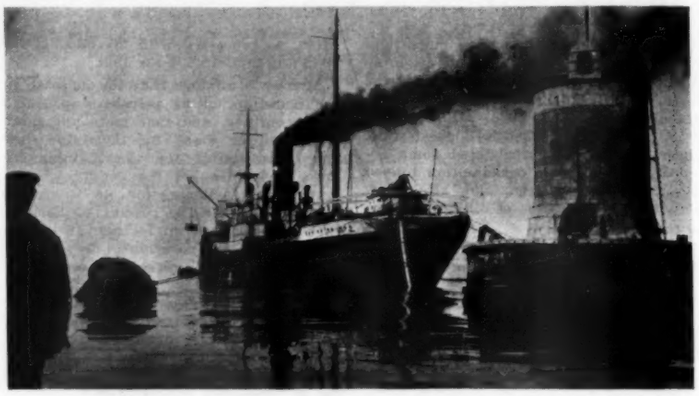
The "Astra" Compania Argentina de Petroleo S.A., with head offices at Buenos Aires, Argentine Republic, incorporated in 1915, owns oil fields at Comodoro Rivadavia (territory of Chubut), Plaza Huincul (territory of Neuquen) and El Tunal (province of Salta) and holds a large share interest in "Itaca" Compania Argentina para la Elaboracion de Productos Petroliferos, S.A., Buenos Aires, operating refineries at Campana on the Parana River.

Comodoro Rivadavia in Patagonia, the southern part of Argentina, is still the principal oil field of the company, where 122,830 feet were drilled with the rotary system in 1933, having at present about 230 producing oil and gas wells of depths between 1,800 and 3,000 feet. Nearly all producing wells are being bailed or pumped by electro-motors, using either individual pumping units or central pumping powers, for which purpose a 2,400-horsepower Diesel motor power station is in operation producing 3 phase A.C. of 6,000 volts.

Big oil field material stores and powerful workshops, both for repairing and construction, including installations for steel castings are available. A refinery in the field is producing first class fuel oil, Diesel oil, motor gasolines and kerosene.

The production of the field is being pumped through a 6-mile pipe line to the company's own harbor and terminal station at Caleta Cordoba on the Atlantic Coast. The tank steamers moor near a caisson submerged in the middle of the bay and connected by 8-inch and 12-inch submarine pipe lines with the shore tanks and by flexible hose with the poop of the tankers. This is the only sea loading station of this kind in South America. There is also a jetty with a steam crane for loading and discharging oil field material transported from Buenos Aires by the company's tank vessels.

The company owns two tank steamers, the "Astra II" of 6,720 tons and the "Astra III" of 7,500 tons deadweight capacity, which are employed for the transportation of the company's oil production from Comodoro Rivadavia either to the storage tank station in the petroleum harbor of Buenos Aires, Dock Sud (capacity 40,000 tons), or to the "Itaca" refineries at Campana on the Parana River. Besides, the small tanker "Astra" of 1,221 tons deadweight and barges are attending to the company's bunker oil business.



Tanker "Astra II" loading oil in Caleta Cordoba, Argentina

In the Plaza Huincul oil field (territory of Neuquen), 18,737 feet were drilled by the cable tool system in 1933 and 19 oil and gas wells are in operation, of between 2,200 and 3,200 feet depths, while a natural gasoline absorption plant of the activated coal system is producing natural gasoline. The crude oil production is pumped to the railway station Challaco through a 9-mile, 4-inch pipe line.

In the company's third field, near El Tunal (province of Salta), in the northern part of Argentina, exploration work is going on with cable tools.

The company's crude oil production in the last six years was as follows:

	Comodoro Rivadavia bbls.	Plaza Huincul bbls.
1928	697,131	.....
1929	830,588	.....
1930	1,016,343	6,882
1931	1,140,124	26,089
1932	1,203,147	86,684
1933	1,145,610	46,874

Partial view of Astra's refinery at Comodoro Rivadavia, Argentina

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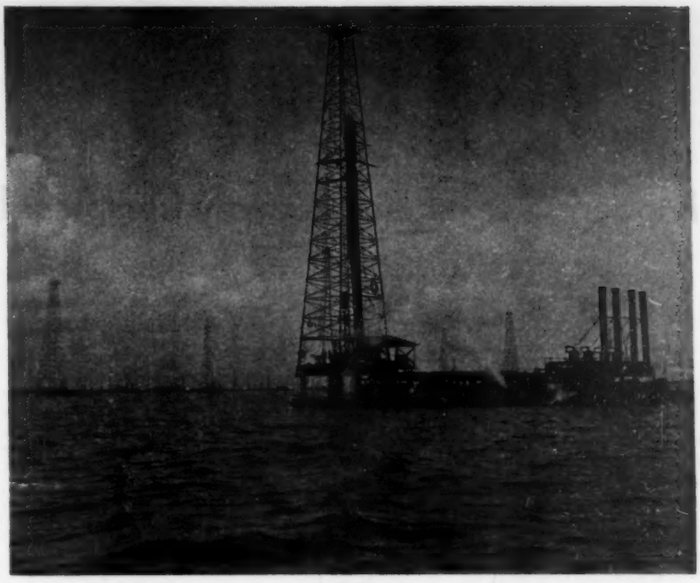
VENEZUELA

Third Largest Producing Country Increaes Percentage of Total World Output



Views of operations in the Lake Maracaibo fields of Venezuela. In foreground is drilling barge connected to drilling well of Lago Petroleum Corp.

Venezuela during 1934 has strengthened its position in the world's petroleum industry. It has not only maintained its rank as the third largest producing country but has also increased its percentage of total world production.

The crude oil production of Venezula for 1934 with December estimated was 139,579,000 bbls., a gain of more than 19,000,000 bbls., or 13.5 per cent over the 1933 figure. The significance of the 1934 figures in relation to previous production and percentage of entire world output are shown in the following table (data in barrels):

Year—	Total	Dy. av.	Percentage of world
1929	137,535,230	376,810	9.22
1930	136,987,662	375,309	9.63
1931	118,878,971	325,696	8.63
1932	118,110,000	322,705	9.03
1933	120,442,246	329,978	8.33
1934*	139,579,000	382,408	9.22

*December estimated.

This table shows that Venezuela reached a new peak in 1934 and regained its position of 1929 in total world output. The following table gives the Venezuelan production by months for 1934 and 1933 (barrels):

	1934	1933
January	9,698,964	10,859,700
February	9,769,000	8,833,778
March	10,900,000	9,944,519
April	11,027,600	9,058,356
May	11,542,000	9,133,045
June	11,203,000	9,262,374
July	11,976,200	10,052,418
August	12,233,000	10,309,267
September	12,075,600	10,181,844
October	12,340,300	10,728,228
November	11,734,018	10,716,502

The 1933 data were compiled by the O'Shaughnessy Oil Bulletin.

Consistent Increase

This table shows a consistent month to month increase in total crude oil production in 1934 over 1933. This greater production in turn reflects increased drilling activity. As shown in Table 1, a total of 185 wells were completed in Venezuela the first 10 months of this year. This compares with 94 completions for the same period in 1933. It is interesting to note that up to October 31, 1934, a total og 2,868 wells had been drilled in Venezuela, of which 1,158 were inactive or abandoned on that date. The enlarged production this year enabled Venezuela in September of this year to pass into the ranks of countries which have produced 1,000,000,000 bbls. of crude oil.

The bulk of the increased production in 1934 is accounted for by the gains in Lagunillas of the Lake fields and Mene Grande and Quirequire. The gain in the production of the latter field in eastern Venezuela amounting to approximately 100 per cent was an outstanding development. Drilling in this field and wildcat operations have made eastern Venezuela operations the center of interest to many operators. It is anticipated that the coming year will see additional developments of even greater interest in eastern Venezuela.

Those familiar with operations are authority for the statement that greater progress has been made in drilling and operating methods than any previous year in the history of the industry. Many practices in drilling and the routine operations of producing wells commonly used in the United States have been adapted to the peculiar operating conditions in Venezuela. As shown in Table 1 of the active wells, on October 31, 497 were flowing naturally, 356 were using the gas lift and 529 were pumping.

Latest Operations

The following table, which is based on November operations in Venezuela, affords additional comparisons between 1934 and 1933 operations (barrels):

PRODUCTION BY COMPANIES

	November		1934	
	1934	1933	Gain	Pct.
Lago Petroleum Corp.	4,054,889	3,355,220	699,669	20.9
Venezuelan Oil Concessions, Ltd.	3,013,230	2,707,380	305,850	11.3
Creole Petroleum Corp.	1,748,089	1,369,890	378,199	27.6
Caribbean Petroleum Co.	1,281,420	1,167,960	113,460	9.7
Venezuelan Gulf Oil Co.	1,161,000	1,380,750	*219,750	*15.9
Colon Oil Corp.	398,890	625,500	*226,610	*36.2
British Controlled Oilfields, Ltd.	76,500	109,750	*33,250	*30.3
Total	11,734,018	10,716,480	1,017,538	9.5

PRODUCTION BY FIELDS

	November		1934	
	1934	1933	Gain	Pct.
Lagunillas	6,590,347	5,526,170	1,064,177	19.2
La Rosa-Ambrosio	1,721,242	1,962,000	*240,758	*12.3
Mene Grande	1,281,420	1,167,960	113,460	9.7
Quirequire	1,220,630	684,600	536,030	78.3
Tarra	398,890	625,500	*226,610	*36.2
Cumarebo	295,109	431,760	*136,651	*31.7
Concepcion	132,090	187,920	*55,830	*29.7
El Mene	76,500	109,780	*33,280	*30.3
La Paz	17,790	20,790	*3,000	*15.1
Total	11,734,018	10,716,480	1,017,538	9.5

This table shows that except for three areas, crude oil production in Venezuela in November was running behind 1933. The gain in Lagunillas was approximately equal to the total increase for the entire country.

Among the operators the gain in the production of the two Standard Oil Co. (New Jersey) companies—Lago Petroleum Corp. and the Creole Petroleum Corp.—is outstanding. The production in Venezuela of the Standard companies now exceeds that of the Royal Dutch-Shell group (V.O.C., Ltd., Caribbean and Colon).

Enlarge Refineries

To take care of the increased crude oil production of Venezuela it has been necessary to enlarge the refineries which operate with this crude oil. The bulk of this crude is refined at two refineries located at Curacao (Shell) and Aruba Island, off the coast of Venezuela, which is now operated by a Lago unit. An improvement and enlargement program is now being completed at the Aruba refinery which will give the plant a crude oil capacity in excess of 150,000 bbls. daily. Improvements also have been made to the Shell refinery at Curacao with additional plans announced for 1935.

Alcohol Motor Fuel Use Increasing in England

In the British House of Commons recently the Chancellor of the Exchequer was asked questions as to the quantity of spirits released for methylation for the production of power alcohol in the United Kingdom during recent years, and also whether it was proposed that these spirits should now be made subject to taxation. With regard to the latter it was stated that the matter was being kept under careful observation, but so far, the chancellor said, he had not felt that action was called for. With regard to the quantity released for methylation for the production of power alcohol, attention was drawn to the periodical statements of the Board of Trade. These show the following quantities, free of duty, retained for use and consumption in the United Kingdom during recent years:

	England and North Ireland	Scotland proof gallons	United Kingdom
1931	17,639	5,781	23,420
1932	96,098	9,382	105,480
1933	374,960	16,054	391,014
Jan.-June, 1934	830,569	9,749	840,318

Since it is to be presumed that the power alcohol was all used in admixture with petrol, normally containing a small proportion of benzole, these figures are a good indication of the rapid increase in this form of motor fuel blend since its widespread distribution commenced in 1933.

TABLE 1—CRUDE OIL PRODUCTION BY FIELDS IN VENEZUELA, SUMMARY OF DRILLING ACTIVITY

	1933		1934*			Well data as of October 31, 1934								Wells completed Jan.-Oct. 1934
							Producers				Nonproducers			
	Total production	Daily average	Total production	Daily average	Total to end of 1934*	Wells drilling	Nat. flow	Gas/air lift	Pumping	Closed in	Inactive	Abandoned	Total wells drilled	
Ambrosio	1,634,374	4,478	1,834,920	5,027	20,074,162	..	5	...	45	25	35	15	125	...
La Rosa	21,650,132	59,315	19,932,719	54,610	221,200,319	1	96	87	199	144	272	46	847	16
Benitez	1,908,581	5,229	2,462,165	6,746	8,498,584	2	24	...	...	9	20	5	58	9
Lagunillas	58,683,492	160,777	72,391,523	198,332	505,156,080	11	214	121	136	26	223	11	739	90
Others	.....	.....	.....	.....	63,480	..	...	...	...	10	2	1	13	...
Total Lake fields	83,876,579	229,799	96,621,327	264,715	754,992,625	14	339	208	380	214	552	78	1,782	115
La Paz and Concepcion	2,426,133	6,674	2,028,181	5,557	19,190,828	..	8	4	69	...	47	5	133	...
Tarra and Los Manueles	7,567,038	20,732	6,455,900	17,687	34,302,295	..	17	...	11	13	29	13	93	3
Mene Grande	13,048,134	35,748	15,784,338	43,245	142,628,477	..	38	97	...	26	73	14	248	8
El Mene and Media	1,704,465	4,670	992,625	2,720	20,879,356	..	4	47	42	...	88	134	316	7
Cumarebo	4,931,352	13,511	3,850,986	10,551	19,359,257	2	33	...	...	15	2	12	62	19
Quiriquire	6,756,730	18,512	13,771,162	37,729	29,907,625	3	57	...	14	7	6	9	93	31
Others	121,791	333	74,535	204	3,353,480	..	1	...	13	41	12	74	141	2
Total	120,442,222	329,979	139,579,057	382,408	1,016,113,942	19	497	356	529	316	819	339	2,868	185

*Partly estimated.

FRANCE

Modern Steam Plant Recently Completed at New Port Jerome Refinery

Power house. General view taken from corner of water treating plant

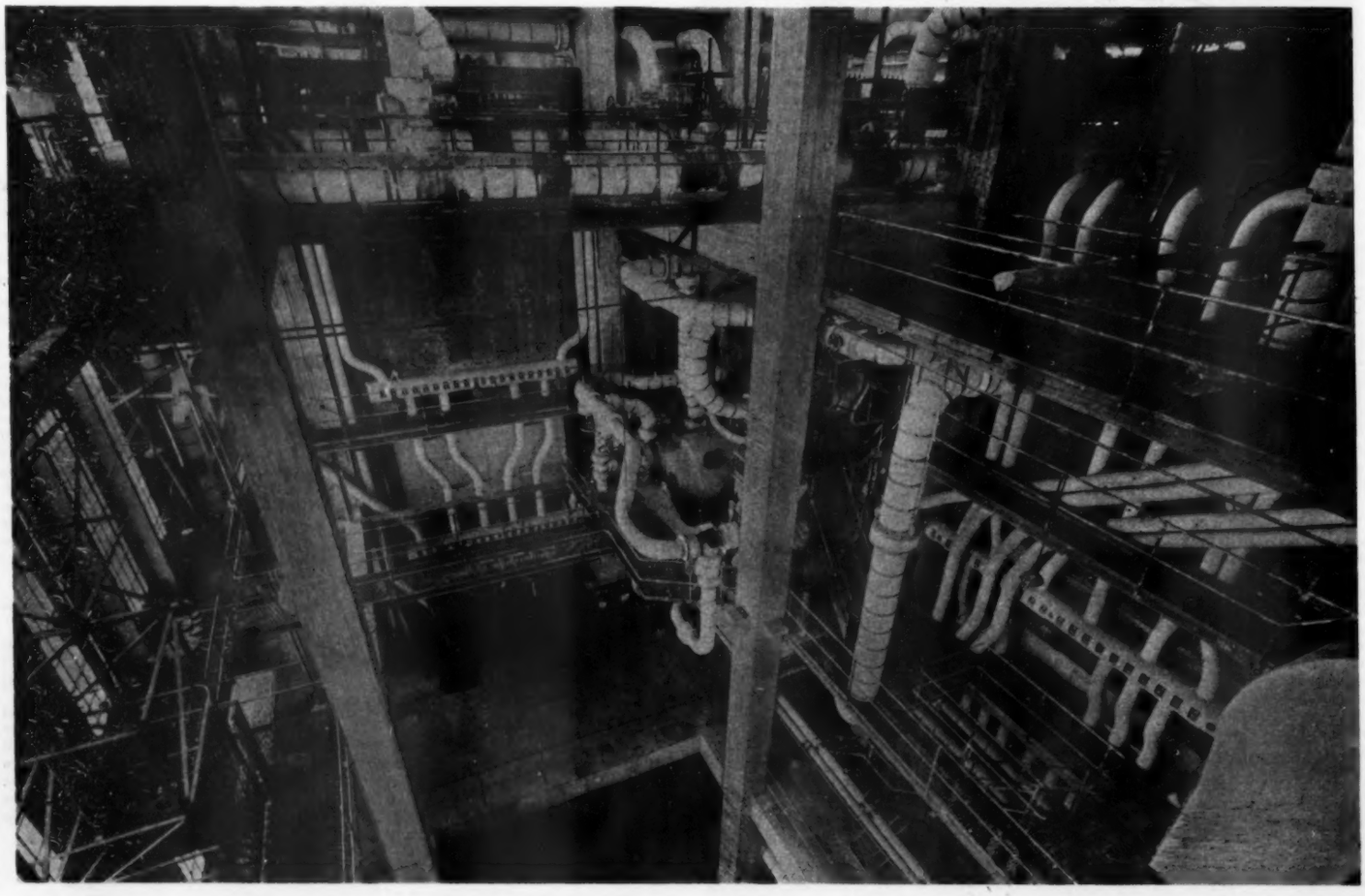
The Raffineries de la Vacuum Co. S. A. F. recently completed a modern steam plant for its new refinery at Port Jerome, France. The steam plant furnishes steam, compressed air and electric power used in the operation of the refinery.

The electric power is generated with turbines covering all the refinery's primary and auxiliary requirements. The steam from the turbines is used in refinery processing. Steam is generated at 225 pounds per square inch at a temperature of 662°F. Steam is delivered to the refinery at 142 pounds per square inch and a temperature of 465°F. Current is generated at 55,550 volts, 3 phase 50 cycle. Air is compressed to 50 and 105 pounds per square inch.

The steam generating units are designed for the combustion of refinery wastes such as soda, tar and acid sludge and also pulverized coal. The unit includes three steam generating units with space provided for a fourth. The electricity is generated by power furnished by three steam turbines with provision made for two later installations. The entire was designed and built by the Foster Wheeler Corp.

The accompanying exterior picture shows power plant in background with water treating plant in foreground. Fuel oil tanks are shown in center.

Inside view shows interior of boiler room. In the center of the picture is the front of No. 1 boiler and at the right is the side of boiler No. 4.



U.S.S.R.

(Continued from Page 117)

clave method. Production will be based on the application (in place of animal and plant fats) of synthetic acids obtained by acidising paraffin distillate, and mineral oils, which qualitatively fully replace the above mentioned fats, as research work has shown.

Paraffin Production. Increased efficiency will be attained by including in the producing process preliminary sweating of the wax distillate, hot pressure filtration and vacuum sweating. It is planned to substitute neutralization with bleaching clays for caustic treatment.

Asphalt Production. It is planned to add asphalt units to all cracking systems.

Coke. For the further development of this commodity, it is planned to erect special oven equipment to replace the existing iron stills.

As to chemical methods, it is planned in the near future to utilize cracking gases and other plant gases for the production of synthetic ethyl and iso-propyl ethers. In the future cracking and by-product gases will constitute a most important raw material for the industrial production of a number of valuable chemical products. The extensive work of the research institutes has led to extremely favorable results and promises for the future a wide development of industrial synthesis on the basis of these gases.

Hydrogenation. An experimental plant is being constructed for investigations of this method in the destructive hydrogenation of heavy fuel oil to produce a light gasoline of high antiknock quality and to improve the lubricating qualities of oil.

U.S.S.R. NOVEMBER OUTPUT

According to preliminary figures the November crude oil production of the U.S.S.R. totaled 2,055,500 tons. On a basis of 7 bbls. (42 gallons) to the ton this amounts to an average production of 479,616 bbls. daily. This output is slightly in excess of first 10 months of year.

Crude runs to stills in November totaled 1,601,800 tons (373,420 bbls. daily) which is less than the average runs of previous months. The drilling for the month totaled 88,323 meters which is also less than for previous months.

UNITED KINGDOM

Carbonization of English Coal Expected Source of High Grade Motor Fuel

In the effort to produce motor fuel from sources other than petroleum, an extensive program of research on the low temperature carbonization of coal has been in progress in England during the past few years. Unfortunately, a number of claims were unofficially made through the English press as to the efficiency of the processes under development. To further impede ready popular support of the movement, several financial failures occurred in companies formed to treat English coal. These conditions led to suggestion by Tom Williams, member of Parliament, that the Fuel Research Board inspect and report officially on any process under development.

The Cannock Process

The National Coke & Coal Co., Ltd., has had in operation for some time a carbonization plant of commercial size producing motor fuel and smokeless coke. In line with Mr. Williams' suggestion, a test run in the plant at Cannock was made in May, 1934, by Dr. C. H. Lander, former head of the Fuel Research Station at Greenwich. The Cannock plant employs a method developed by W. B. Mitford. The coal to be processed is finely pulverized and mixed with about 50 per cent of heavy oil from previous distillations. Creosote is also added in varying amounts and the coal is charged into the retort suspended in this heavy liquid. The retorts numbering two, consist of steel sylinders 50 feet in length and 5 feet in diameter, inclined about a foot throughout their length. They rotate slowly over oil or gas fired burners. In these retorts the semi-liquid mass is kept in constant agitation.

As it enters the retort, the mixture gives off the light vapors from the coal and as it travels the length of the cylinder most of the volatile components are evolved, leaving a smokeless coke. The vapors are taken off, condensed and fractionated in a tower. The motor spirit requires only washing to remove acid. The wild gases are used in the retort burners, and the heavy oil is rerun.

The coal utilized in this process must be clean, and contrary to many reports, must be of sufficiently high grade to be commercially useful. This disproves the theory that carbonization plants will be able to produce high grade motor fuel from colliery waste and other coal of small commerical value.

Test Results

Details of the test made at the plant by Doctor Lander and his associates are incorporated in the following report:

"In accordance with a suggestion made by me arrangements were made for a test of about a week's duration on one retort by a specially engaged technical staff working under my supervision. This test took place during the period from May 19 to May 26, 1934.

"For the purpose of our test a blend of Staffordshire coals was used which, after pulverizing, was intimately mixed with distillate which had previously been through the process, together with fresh industrial creosote regularly added in proportion of 8 per cent of the total oil.

"This mixture was fed to the heated revolving retort in the manner which has been practiced in the past nine months. The following is a detailed statement of the results from this run made under our continuous observation:

Number of hours running	140
Total coal processed, tons	*143.9
Total creosote added, gallons	2,710
Total yield of petrol	2,192
Total yield of smokeless fuel, tons	112
Amount of petrol (washed and ready for local market) per ton of coal processed, gallons	15 3
Amount of smokeless fuel per ton of coal processed, cwt.	15.6
Oil produced (free from petrol), gallons	655
Stoppages	(†)

*Colliery weights into bunkers. †A few hours in topping plant and 7¾ hours in retort house on account of pump breakdown.

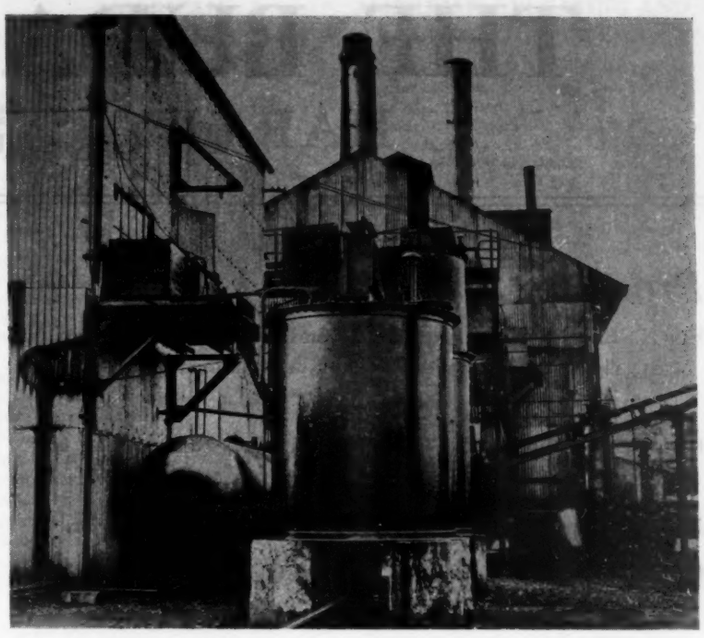
"Under the process, as operated under our observation at Cannock, I hereby report that raw materials in the proportion of 1 ton of coal fines together with 18.9 gallons of industrial creosote were mixed with sufficient coal distillate previously produced by the plant to bring the resultant mixture to approximately 50 per cent solid coal to 50 per cent liquid. There was produced 15.3 gallons of motor spirit ready for sale to local garages; 15.6 cwt. of smokeless fuel, and 4.5 gallons of heavy oil. This heavy oil is ready for immediate re-use with further coal fines without any further treatment.

Special Features

"There are four outstanding features in regard to the Cannock process which differentiate it from normal low-temperature carbonization. These are as follows: (1) The possibility of obtaining 15 gallons or more of motor spirit by processing raw materials consisting of coal to which 18-19 gallons of creosote per ton has been added. (2) The production of approximately 15 cwt. of smokeless fuel from the above raw materials. (3) No deposition of tars or pitches at any stage in the process. (4) No apparent deterioration in the qualities of the oil, which, after having the petrol removed, is returned to the plant for mixing with further coal fines, thus obviating the necessity for using fresh creosote other than the makeup of 18 gallons mentioned above.

"With reference to these four points, Nos. 1 and 2 are substantiated by the figures given above. In regard to No. 3 I have to report that over the run we found no tar or pitch deposited in the plant.

"In regard to No. 4 the topped oil returned to the distillation plant was regularly sampled and showed no thickening whatever. In addition, samples taken by us were sent to an independent analyist, whose results show that there was no appreciable change in the mixing stock during the working of the test."

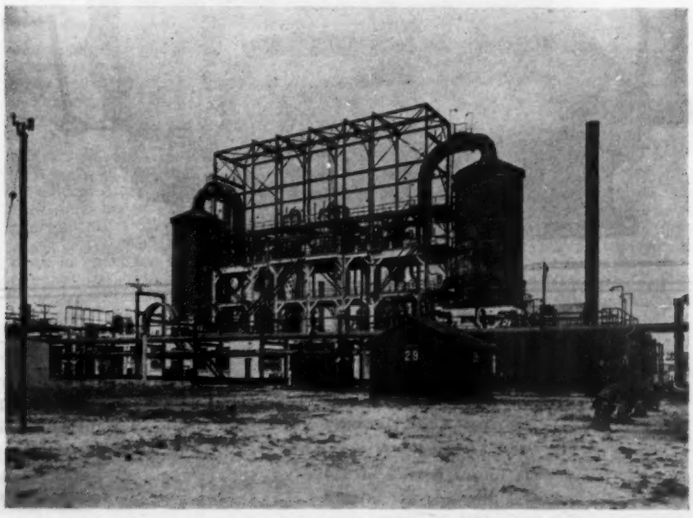


—Ewing Galloway.

View of the Cannock plant of the National Coke & Oil Co., showing the distillation equipment and coke conveyer

Refinery and Gas Plant in the Sumatra Field, Netherlands East Indies

Engine room in gas plant in the Pandopo producing field of N. V. Nederlandsche Koloniale Petroleum Maatschappij



Two new vacuum pipe stills at the N.K.P.M. refinery at Soengei Gerong, Sumatra

THE BUDA COMPANY

HARVEY (CHICAGO SUBURB) ILLINOIS

Products . . .

ENGINES—Gasoline, Natural Gas and Diesel engines for drilling rigs, pumping units, winches and stationary installation service.

ELECTRIC GENERATOR SETS—Diesel, Natural Gas and Gasoline Engine Driven.

JACKS—Heavy duty lifting jacks for field and shop service.

INDUSTRIAL EQUIPMENT—Post Hole Diggers, Railroad Supplies.

OVER SIXTY OIL COMPANIES ARE USING BUDA POWER

Throughout the United States and Foreign Oil Fields these ENGINES have given satisfactory service as DRILLING RIGS, PUMPING UNITS and OIL FIELD WINCHES and in practically all types of stationary service where a rugged, dependable, trouble-free and long-life power plant is required.

The latest development of The Buda Company is the complete line of Buda Diesel engines. These engines are designed for rugged service and are light in weight. The governors on these engines are especially adapted to drilling and pumping service.

BUDA ENGINE SPECIFICATIONS

Engines range in H. P. from 20 to 186

NATURAL GAS AND GASOLINE ENGINE POWER UNITS

Model	Number Cylinders	Bulletin Number	Bore and Stroke	*Weight	Speed Range
H-173	4	801	3½x4½	880	1000-1800
H-205	4	801	3 13/16x4½	905	1000-1800
H-217	4	801	3 13/16x4¾	925	1000-1800
KT-281	4	826	4⅛x5¼	1775	600-1200
YT-381	4	827	4½x6	2420	600-1200
YR-425	4	827	4¾x6	2445	600-1200
BTU	4	828	5x6½	3175	600-1000
FR	4	829	5½x6½	3225	600-1000
JV-4	4	829	5¾x7⅛	4250	600-1000
JK-4	4	830	6x7⅛	4310	600-1000
J-214	6	788	3⅜x4	944	1000-1800
H-260	6	789	3½x4½	1114	1000-1800
H-298	6	789	3¾x4½	1139	1000-1800
K-325	6	807-8	3 13/16x4¾	1640	1000-1800
K-369	6	807-8	4 1/16x4¾	1660	1000-1800
K-393	6	807-8	4 3/16x4¾	1800	1000-1800
K-428	6	807-8	4⅜x4¾	1810	1000-1800
L-468	6	807-8	4¼x5½	1850	1000-1800
L-525	6	807-8	4½x5½	1860	1000-1800
GL-6	6	798	4½x6	2760	1000-1800
GF-6	6	798	4¾x6	2785	1000-1800
JV-6	6	831	5¾x7¼	6135	600-1000
JK-6	6	831	6x7¼	6305	600-1000

DIESEL ENGINE POWER UNITS

4-D-186	4	832	3⅝x4½	1125	800-1500
6-D-377	6	833	3 13/16x5½	2300	1000-1800
6-D-415	6	833	4x5½	2400	1000-1800
4-D-904	4	834	6x8	7000	600-1000
4-D-1074	4	835	6¼x8¾	7700	600-1000
4-D-1160	4	835	6½x8¾	7800	600-1000
6-D-1611	6	836	6¼x8¾	9500	600-1000
6-D-1742	6	836	6½x8¾	9600	600-1000

*Weight cover complete power unit.

LOS ANGELES, CALIFORNIA
Production Equipment Company
655 East Gage Avenue

TULSA, OKLAHOMA
Buda Engine Service of Tulsa
521 West Archer Street

MOUNT PLEASANT, MICHIGAN
Atha Supply Company

SALES OFFICES:

FORT WORTH, TEXAS
Jno. Muller Company
Third and Throckmorton Streets

HOUSTON, TEXAS
Jno. Muller Company
1509 San Jacinto Street

KILGORE, TEXAS
Jno. Muller Company

NEW YORK, NEW YORK
The Buda Company
30 Church Street

EXPORT OIL FIELD DIVISION
149 Broadway, New York City

LONDON, ENGLAND
The Buda Company England
230 Cecil Chambers, Strand
London, W. C. 2

AMERICAN RELEASING AND CIRCULATING OVERSHOT

This tool is especially designed to catch drill pipe, coupling or tool joints. The overshot releases from any point. Slips are keyed in the bowl and have a left hand thread. They release by rotating to the right.

Special slips made to catch worn tool joints or drill pipe for use with standard overshot. The standard guide is interchangeable with wall hook and milling shoe. These features save many a run in and out of the hole.

When the fish is caught, the rubber packer makes a tight joint between the overshot and fish which assures circulation. This tool has proven successful in both deep and shallow fields.

Этот инструмент спроектирован специально для вылавливания бурильных труб, муфт и соединительных замков. Овершот может быть освобожден в любом месте. Слипсы имеют левую резьбу и укреплены в воронке при помощи шпонок. Они освобождают захваченный предмет при вращении в правую сторону. Имеются специальные слипы для вылавливания сработанных соединительных замков и бурильных труб. Эти слипы применяются со стандартным овершотом. Стандартный направляющий башмак взаимозаменяем с боковым крючком, а также с фрезерным башмаком. Благодаря такой взаимозаменяемости сокращается число спусков инструмента в скважину.

Когда предмет захвачен, то пространство между ним и овершотом плотно заполняется резиновой набивкой, благодаря чему обеспечивается правильная циркуляция грязевого раствора. Этот овершот применяется одинаково успешно как при глубоком бурении, так и при бурении на небольшие глубины.

La Pescadora American es una herramienta destinada especialmente para agarrar tubos, acoplamientos o herramientas dentro de los pozos. Dicha herramienta puede soltar lo que agarra a cualquiera altura. Sus piezas deslizantes están enchavetadas a la parte cóncava y tiene rosca de mano izquierda. Sueltan haciéndolas girar a la derecha. Las piezas deslizantes sirven para pescar uniones de tubos y herramientas desgastadas. La pieza que sirve de guía se puede substituir por una herramienta de gancho y zapata perforada. Este detalle ahorra tener que sacar y meter varias veces la herramienta.

Cuando la Pescadora ha agarrado, la empaquetadura de caucho, forma una unión hermética, entre la herramienta y la pieza pescada, quedando libre el movimiento giratorio.

Esta herramienta ha dado resultados muy satisfactorios en perforaciones profundas y en las poco profundas..

Ce Repêcheur Américain est destiné spécialement à attraper dans les puits les tuyaux de forage, les accouplements ou autres outils. Il peut libérer l'objet saisi en tout point. Il porte des coulisseaux clavetés sur sa partie concave et filetés à gauche. La libération des objets se fait par rotation vers la droite. Il existe des coulisseaux spéciaux pour repêcher les outils usés. La pièce-guide standard, le crochet mural et le sabot de forage sont interchangeables. Ces caractéristiques éliminent la nécessité de sortir fréquemment l'appareil du puits.

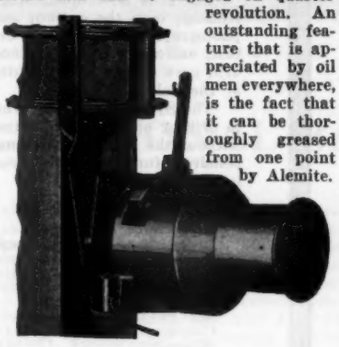
Une fois l'objet à repêcher saisi, la garniture de caoutchouc constitue un joint hermétique entre le repêcheur et cet objet, ce qui assure la circulation. Cet outil a donné entière satisfaction, tant pour les puits profonds que pour ceux de faible profondeur.

AMERICAN AUTOMATIC CATHEAD

In the American Automatic Cathead, we offer operators a product that is simple in construction, only five working parts, yet does the job perfectly.

All the movable parts of this cathead are housed and mounted on the spool which keys on the line shaft. The clutches have four-point contact and two-point disengagement. There are twelve square inches of clutching face when engaged.

The American Cathead has a 36-inch stroke and can be engaged on quarter revolution. An outstanding feature that is appreciated by oil men everywhere, is the fact that it can be thoroughly greased from one point by Alemite.



Автоматическая лебедка для оттяжки, известная под названием "American Automatic Cathead" отличается простотою своей конструкции; несмотря на это она работает чрезвычайно удовлетворительно.

Все движущиеся части этой лебедки заключены в кожух и насажены на катушку, которая в свою очередь укреплена шпонками на приводном валу. При включении муфты кулачки захватывают в четырех пунктах, причем общая площадь захвата составляет 12 кв. дюймов. Выключение муфты происходит в двух пунктах.

Ход лебедки при одном обороте составляет 36 дюймов и ее можно включать на протяжении четверти оборота. Характерное преимущество лебедки, завоевавшее прекрасную репутацию среди нефтяников, заключается в том, что вся смазка салом производится под давлением и при помощи одной масленки.

El Torno American automático que ofrecemos es un producto de construcción sencilla, que sólo tiene cinco piezas movibles y trabaja a perfección.

Todas las piezas movibles de esta máquina están alojadas y montadas en un carrete enchavetado al eje. Los embragues tienen cuatro puntos de contacto y dos puntos de desprendimiento. Cuando está hecho el embrague la superficie de contacto es de 12 pulgadas cuadradas.

El Torno American tiene carrera de 36 pulgadas y puede embragarse con sólo darle un cuarto de vuelta. Un detalle sobresaliente, que aprecian los petroleros, es que puede engrasarse perfectamente con Alemite desde un solo punto.

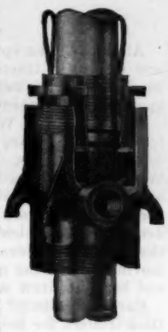
Ce Treuil Américain Automatique est un appareil d'une construction simple, ne comportant que cinq organes mobiles, mais travaillant parfaitement.

Toutes les pièces mobiles sont logées et montées sur la bobine clavetée sur l'arbre de transmission. Les embrayages ont quatre points de contact et deux points de dégagement. Une fois engagée, la surface d'embrayage est de douze pouces carrés.

Le Treuil Américain a une course de 36 pouces et peut s'engager sur un quart de révolution. Une caractéristique saillante très appréciée dans l'industrie pétrolière réside dans son graissage qui peut s'effectuer parfaitement avec Alemite d'un seul point.

AMERICAN CASING SUSPENDER AND BLOWOUT PREVENTER

This tool was especially designed to prevent blowouts between strings of casing, and to allow suspension of casing at setting points.



Equipped with a special composition packing, it will resist salt and sulphur water found in so many fields.

The body of the suspender is a one-piece bowl which permits tie-downs to be made to the four ears without damage to the special packing because of connection necessary as in some of the older types. Tested to 10,000 pounds pressure. The bowl has a male A.P.I. casing connection on top of body which makes it possible to screw on swedge nipple or make any other desired connection.

Этот инструмент сконструирован специально для предотвращения взрывов между колоннами обсадных труб и для подвешивания этих колон на требуемой глубине.

Набивка этого инструмента сделана из специальной композиции, сопротивляющейся действию солей и сернистых вод, часто встречающихся во многих нефтяных районах.

Корпус инструмента представляет собою воронку, сделанную из одного куска и снабженную четырмя ушками для прикрепления канатов. Такое устройство предохраняет набивку от повреждений, каковые повреждения часто случаются с инструментами некоторых других типов. Испытание инструмента производится под давлением в 10.000 англофунтов. Воронка на своем верхнем конце снабжена наружной стандартной нарезкой A.P.I., благодаря чему этот инструмент можно свинчивать с переводным ниппелем или с другим стандартным соединителем.

El suspendedor y eliminador de expulsiones violentas es una herramienta destinada para evitar las expulsiones violentas entre las tuberías de revestimiento y sirve para suspender las tuberías.

Como está provisto de empaquetadura especial, resiste la acción del agua salada o sulfurosa que con frecuencia se encuentra en los campos petrolíferos. El cuerpo de esta herramienta es una pieza cóncava con cuatro orejas que penetran hacia abajo sin dañar la empaquetadura, como sucede en los suspendedores antiguos. Está probado a presión de 10.000 libras.

La parte cóncava en su parte superior tiene un macho de conexión A. P. I. que permite atornillar la herramienta a una boquilla o hacer cualquiera otra conexión.

Ce Suspenseur et Eliminateur des expulsions violantes est un appareil destiné à prévenir les expulsions violentes entre les rangées de tubage, et de permettre la suspension des tubages.

Muni d'une garniture de composition spéciale, il peut résister à l'eau salée ou sulfureuse si fréquente dans les terrains pétroliers. Le corps du suspenseur est une partie concave à quatre oreilles qui pénètrent vers le bas sans endommager la garniture spéciale, comme c'est le cas dans les modèles anciens. Essayé sous une pression de 10.000 lbs. La partie concave possède un raccord mâle A. P. I. à sa partie supérieure, qui permet de visser sur un raccord de réduction ou sur tout autre raccord.

AMERICAN RELEASING AND CIRCULATING SPEAR

One of the most ruggedly and simply constructed tools in the oil fields is the American Releasing and Circulating Spear, which is manufactured by the American Iron and Machine Works Co., Oklahoma City.

The American Spear has a hollow stem for fluid circulation. Another feature is the shoulder on the releasing nut which slides vertically in the stem and key. The box of the slip is threaded righthand, which allows a quick, easy release.

The spear slip is a solid ring at the top end with the lower part split for expansion of the gripping section. The mandrel will rotate on the stem which minimizes friction on the releasing spear. It can be furnished with or without rubber packer for circulation. Will catch any size tubing or casing.

Труболовка, известная под названием "American Releasing and Circulating Spear", отличается чрезвычайной простотой и прочностью своей конструкции. Она изготовляется фирмой American Iron and Machine Works Co., Oklahoma City.

Этот инструмент имеет полый ствол для циркуляции грязевого раствора. Другой его особенностью является заплечик на освобождающей гайке, которая скользит на шпонке по стволу труболовки. Корпус слипсов снабжен левой нарезкой, благодаря чему захваченную трубу можно быстро и легко освободить.

Верхняя часть слипса труболовки имеет сплошную кольцеобразную форму. В нижней части слипса это кольцо имеет продольные сквозные прорези, что, при захвате трубы, дает возможность слипсу расшириться. Корпус труболовки свободно вращается вокруг ствола, благодаря чему трение о трубы доведено до минимума. Труболовка может быть поставлена с резиновым циркуляционным пакером или без такового. Она пригодна для ловли бурильных и насосных труб любого размера.

Al Arpón American giratorio y de desprendimiento es la herramienta más sencillamente construída en terrenos petrolíferos. La American Iron and Machine Works Co., Oklahoma City fabrica esta herramienta.

El Arpón American tiene vástago hueco para dejar libre la circulación del líquido. Otro de sus detalles es el reborde en la tuerca de desprendimiento, la que se desliza verticalmente en el vástago y la chaveta.

La caja de la pieza deslizante tiene rosca de mano derecha, lo que facilita el despredimiento de la herramienta.

La pieza deslizante del Arpón es un anillo macizo en la parte superior, que tiene la parte inferior hendida para la expansión de la sección que agarra. El mandril gira con el vástago, lo que disminuye el rozamiento en la herramienta. Se suministra con o sin empaquetadura de caucho para la libre circulación del líquido. Pesca tubos de cualquiera dimensión.

Ce Harpon Amfflricain est un des outils de prospection pétrolière les plus solides et les plus simplement construits; it est fabriqué par la American Iron and Machine Works Co., Oklahoma City.

Le Harpon Américain comporte une tige creuse pour la circulation du liquide. Il possède, en outre, un rebord sur l'écrou de dégagement qui glisse verticalement dans la tige et la clavette. La boîte du coulisseau est filetée à droite, ce qui permet un dégagement rapide et aisé.

Le coulisseau de harpon consiste en un anneau solide au sommet et fendu à la base pour permettre l'expansion du dispositif d'accrochage. Le mandrin tournera sur la tige, ce qui réduit le frottement sur le harpon au minimum. On le fournit muni ou non muni d'une garniture de caoutchouc pour la circulation. Peut attraper les tubages de toutes dimensions.

Write for further information

AMERICAN IRON & MACHINE WORKS CO.

P. O. Box 1177 Oklahoma City, Oklahoma, U. S. A.

ALLSTEEL PRODUCTS

Portable Draw Works—Portable Pulling Winches—Pipe Line Booms

See Advertisement, Page Two, This Issue

Allsteel Products Manufacturing Company manufacture their products under the "Cardwell-Allsteel" Trade Mark of highest quality materials. Simplicity in design eliminates surplus parts. Re-inforced frames, at points where strength is needed, eliminates excess weight where excess strength is not needed, resulting in portable units with minimum weight.

In these simply designed units are found anti-friction Timken and Hyatt Bearings, alloy heat treated shafts, and many original features, at lower costs, than are usually found without these valuable long life features.

These Oil Well Servicing Winches are available for wells of any depth, and may be powered by natural gas, butane, gasoline, Diesel, or electric prime movers; in sizes from 42 to 160 horsepower, in skid-type, easily portable units.

There are also five sizes for mounting on Caterpillar Tractors.

All Models, except one small skid-type, and one small tractor type, are available in double drum units—with, or without spudding attachment.

Portable Draw Works are available in four sizes for rotary drilling to four thousand foot depths. The Portable Draw Works Units are available with spudding attachment, and double drum, making a combination rotary and standard tool drilling unit which eliminates much of the expense incident to moving in and moving out of the conventional rig front and built up draw works.

Cardwell Allsteel Pipe Line Booms and Back Fillers for mounting on all sizes of Caterpillar Wide Gauge Tractors are known the world over.

All of the "Cardwell Allsteel" Products are built in volume production, through which prices are found much lower, and deliveries are prompt.

Additional information gladly furnished.

Фирма ALLSTEEL PRODUCTS MANUFACTURING COMPANY изготовляет свои продукты под маркой "Cardwell-Allsteel" из материалов самого высокого качества. Простота конструкции устраняет излишние части механизмов. Благодаря тому, что рамы усилены только в тех местах, где требуется крепость, нет излишнего веса там, где не требуется излишней прочности. В результате получаются переносные установки с минимальным весом.

В этих машинах простой конструкции имеются анти-фрикционные подшипники Timken и Hayatt., термически обработанные валы из специальных сплавов и многие другие достоинства. При этом, цена их более низкая, чем обычно уплачивается за машины, не имеющие всех этих деталей.

Лебедки для нефтяных скважин изготовляются для любых глубин и могут быть снабжены двигателями, работающими естественным газом, бутаном, газолином, либо Дизель-моторами или электромоторами. Размер установок колеблется от 42 до 160 лошадиных сил. Они монтированы на салазках и легко переносятся.

Также имеется пять размеров лебедок, устанавливаемых на тракторах Caterpillar.

Все модели, за исключением одной маленькой модели на салазках и одной маленькой модели тракторного типа, поставляются с двумя барабанами и могут быть снабжены приспособлением для работы оттяжкой.

Переносные лебедки для вращательного бурения изготовляются четырех размеров для работы до 4000 фут. глубины. Эти переносные лебедки могут быть снабжены приспособлением для работы оттяжкой и двумя барабанами, благодаря чему получается комбинированная установка для работы вращательным или канатным способом. Это устраняет многие расходы, связанные с вывозом из вышки одной лебедки и установкой другой.

Стрелы Cardwell-Allsteel для укладки нефтепроводов и засыпатели грунта, устанавливаемые на ширококолейных тракторах Caterpillar всех размеров, — известны по всему миру.

Все продукты "Cardwell-Allsteel" изготовляются в массовых количествах, благодаря чему достигается более низкая продажная стоимость и скорость доставки.

Мы с удовольствием готовы дать дополнительные информации.

La Allsteel Products Manufacturing Company fabrica sus productos bajo la marca comercial de "Cardwell-Allsteel", sinónima de lo mejor en calidad. La sencillez en proyecto y construcción reduce a un mínimo el número de piezas. Los armazones reforzados en los puntos en que se requiere firmeza, evitan el exceso de peso en los puntos en que no hay necesidad de adicional resistencia. Por esta razón, el equipo, gracias a su peso mínimo, resulta muy portátil.

En estos productos de sencilla construcción se hallan cojinetes Timken y Hyatt, arboles de aleación de acero de especial tratamiento térmico y varios otros rasgos importantes, a menor costo que en otros similares que se suministran generalmente sin semejantes ventajas.

Estos montacargas o tornos para trabajos petrolíferos se ofrecen para pozos de toda profundidad y pueden accionarse con gas natural, butane, gasolina, motor Diésel y motores eléctricos. Los hay de 42 a 160 caballos de fuerza, en tipo de resbaladera o patín muy fácil de trasladar.

Hay también cinco tamaños para instalación sobre tractores Caterpillar.

Todos los modelos, con excepción de uno pequeño de tipo de patín y de otro pequeño de instalación sobre tractor, se ofrecen en modelos de tambor doble, provistos de aditamiento especial de cable, o sin él.

Las máquinas giratorias de tracción portátiles se ofrecen en cuatro tamaños para la perforación rotatoria de pozos hasta de cuatro mil pies de profundidad. Las máquinas giratorias de tracción portátiles se ofrecen con aditamientos especiales para cable y tambor doble, constituyendo combinaciones de equipo rotativo y de equipo corriente, que evitan gran parte del gasto implicado en instalar y desmontar los equipos.

Los aguilones para tubería y los rellenadores Cardwell Allsteel, para montaje en todos los tamaños de tractores Caterpillar de vía ancha, son conocidos en todas partes del mundo.

Todos los productos Cardwell Allsteel se fabrican en grande escala. Por esta razón, resultan más económicos sus precios y más rápidas sus entregas.

Gustosamente suministraremos información adicional a quien se sirva pedirla.

La Allsteel Products Manufacturing Company fabrique ses produits de marque "Cardwell-Allsteel" avec des matières de toute première qualité. La simplicité de leur conception supprime toute pièce inutile et des bâtis renforcés aux endroits nécessaires de façon à éviter le poids en surplus, assurent la facilité de déplacement des appareils.

Cet appareillage comporte des roulements Timken et Hyatt, des arbres en alliages traités et un grand nombre d'avantages à des prix plus bas qu'on ne demande généralement pour ce genre de matériel.

Ces treuils sont livrés pour puits pétrolifères de toutes profondeurs et peuvent fonctionner au gaz naturel, au butane, à l'essence ou par moteur Diesel ou électrique. Modèles de 42 à 160 CV, montés sur madriers et facilement déplaçables. Cinq modèles pour montage sur tracteur Caterpillar.

Tous les modèles, sauf le plus petit sur madriers et un des petits treuils pour tracteur, sont livrés avec deux tambours, avec ou sans dispositif à percussion.

Les machines d'extraction sur roues sont fournies en quatre dimensions pour forage rotatif à quatre mille pieds de profondeur. Munies de dispositif à percussion et de deux tambours, elles constituent un appareil mixte rotatif et à forer supprimant les frais de pose et de démontage des derricks et de la machine.

Les mâts Cardwell Allsteel à pipelines et les remblayeurs de cette marque pour montage sur tracteurs Caterpillar à voie large sont fameux dans le monde entier.

Tous les produits Cardwell Allsteel sont construits en grande série à des prix très réduits. Promptes livraisons. Renseignements supplémentaires sur demande.

ALLSTEEL PRODUCTS MFG. COMPANY

WICHITA, KANSAS, U.S.A.

Cable Address: "ALLSTEEL"—Bentley's Code.

SPERRY-SUN WELL SURVEYING INSTRUMENTS

Sectional view of a SYFO Clinograph

Sectional view of a Surwel Clinograph

Since the discovery of the first oil well there have been many important production developments—among which the Sperry-Sun Surveying Devices are recognized as outstanding contributions to the industry.

We offer to the industry three instruments—the Surwel, the H-K and the Syfo Clinographs.

The Surwel Gyroscopic Clinograph surveys a well by photograph process accurately and records the vertical deviation and direction at all depths. It is the only instrument which is not affected by **Tortuosity** nor by **Magnetic Influence** when recording. The **Surwel** is self-checking and the records permanent.

The H-K Directional Magnetic Clinograph records in single readings both the amount and the direction of inclinations by photographic process. It is designed for **Open Holes only.** It is fast, extremely accurate since the results are available to the drill crew within five minutes after the instrument comes out of the hole.

The **Syfo** Clinograph permits accurate control of inclination in drilling operations. The tests are accurately and easily made without the use of **dangerous acids.** It **quickly** and very **inexpensively** furnishes daily records on paper of vertical deviation in drilling.

С момента открытия первой нефтяной скважины было сделано много важных изобретений и усовершенствований, среди которых аппараты Sperry-Sun для исследования скважин признаны как приносящие самую ценную дань в пользу этой индустрии.

Мы предлагаем нефтяной индустрии три инструмента: Clinograph Surwel, Clinograph H-K и Clinograph Syfo.

Жироскопический Clinograph Surwel дает фотографическим процессом аккуратную отметку отклонения скважины от вертикальной линии и направление этого отклонения на любой глубине. Это единственный инструмент, на показание которого не отражается ни *извилистость скважины*, ни *магнитное влияние*. Аппарат **Surwel** сам себя выверяет и его отметки могут сохраняться в архиве.

Магнитный Clinograph H-K отмечает на одной и той же пластинке фотографическим процессом как величину, так и направление отклонений. Он сконструирован *только для открытых скважин* (скважин без труб). Он работает быстро и чрезвычайно аккуратно. Результаты находятся в распоряжении буровой партии уже через пять минут после извлечения инструмента из скважины.

Clinograph Syfo позволяет аккуратно контролировать отклонения во время производства бурильных работ. Исследования ведутся аккуратно и легко без применения *опасных кислот*. Этим инструментом указываются на бумаге *быстро* и *очень дешево* ежедневные записи отклонений от вертикальной линии при бурении.

Полная литература об этих инструментах высылается нашей фирмой по запросу.

Después del descubrimiento del primer pozo petrolífero, se han introducido numerosos perfeccionamientos importantes a la explotación del petróleo, y entre ellos, los aparatos de reconocimiento Sperry-Sun constituyen contribuciones de primer orden a esta industria.

Ofrecemos a la industria tres instrumentos: el clinógrafo Surwel, el clinógrafo H-K y el clinógrafo Syfo.

El clinógrafo giroscópico Surwel hace el reconocimiento o exploración de los pozos por medio de un procedimiento fotográfico, registrando la desviación vertical y la dirección de los pozos de toda profundidad. Es el único instrumento que no es afectado por la *tortuosidad* ni la *influencia magnética*, durante su función registradora. El Surwel registra automáticamente y el registro obtenido es permanente.

El clinógrafo magnético de dirección H-K da acusación simultánea, indica, al mismo tiempo, el grado y la dirección de las inclinaciones, por medio de un procedimiento fotográfico. Se construye para emplearse solamente en *pozos abiertos*. Es de un funcionamiento rápido de alta precisión, pues las observaciones registradas pasan al conocimiento de la cuadrilla de perforadores en el espacio de cinco minutos después de extraído el instrumento del orificio del pozo.

El clinógrafo Syfo permite controlar con suma precisión la inclinación durante las operaciones de perforación. Los ensayos se hacen toda facilidad y con toda la exactitud deseada, sin necesidad de emplear *ácidos dañinos o peligrosos*. Suministra con *rapidez y economía*, indicaciones diarias, trazadas sobre papel, sobre la desviación vertical durante la perforación.

A solicitud suministraremos a quien la pida información completa acerca de estos admirables instrumentos de precisión.

View of H-K Directional Magnetic Clinograph

Depuis le découverte du premier puits pétrolifère, il y a eu de nombreux perfectionnements importants dans l'exploitation du pétrole—parmi lesquels les appareils de prospection Sperry-Sun sont des contributions de tout premier ordre dans la branche.

Nous offrons à l'industrie trois instruments—le clinographe Surwel, le clinographe H-K et le clinographe Syfo.

Le clinographe gyroscopique Surwel fait la prospection du puits au moyen d'un procédé photographique et enregistre la déviation verticale et la direction du pits à toutes les profondeurs. C'est le seul instrument qui ne suit affecté ni par la *Tortuosité*, ni par *influence magnétique*, au cours de l'enregistrement. Le clinographe Surwel enregistre automatiquement et l'enregistrement obtenu est permanent.

Le clinographe de direction magnétique H-K enregistre en une lecture unique, à la fois le degré et la direction des inclinaisons, au moyen d'un procédé photographique. Il est construit pour emploi dans les *Puits Ouverts seulement*. Il est d'un fonctionnement rapide, d'une haute précision, puisque les observations enregistrées sont entre les mains de l'équipe de forage dans l'espace de cinq minutes, après que l'instrument a été sorti du trou de forage.

Le clinographe *Syfo* permet le contrôle précis de l'inclinaison au cours des opérations de forage. Les mesures se font ainsi facilement, avec toute la précision désirable, et sans l'emploi *d'acides d'un maniement dangereux*. Il fournit *rapidement* et *très économiquement* des indications journalières sur papier de la déviation verticale pendant le forage.

Nous tenons à la disposition de ceux qui la désire, notre complète documentation au sujet de ces instruments de précision.

Complete literature on these instruments can be supplied by our company upon request.

SPERRY-SUN WELL SURVEYING CO.

***Main Office*—1608 Walnut Street, Philadelphia, Pa.**

***Branch Service Offices*—Houston, Los Angeles, Tulsa.**

Skyline of business district, Tulsa, Okla., U.S.A. Arrow points to National Bank of Tulsa Building.

NATIONAL BANK OF TULSA

The National Bank of Tulsa is known as "The Oil Bank of America" and it is justly proud of the dominant position that it occupies as the leading financial institution of the oil industry.

With a capital structure of $8,000,000 and total resources in excess of $45,000,000, the facilities and services of this bank adequately meet the needs of the producers, refiners and marketers of petroleum and its by-products.

Customers of the National Bank of Tulsa can be found in all major oil fields of the U. S. A. and in many foreign oil-producing countries. Tulsa is the home of hundreds of oil companies, petroleum equipment manufacturers, supply companies and industries closely allied to the oil business. Tulsa is the home of the International Petroleum Exposition, most of the important oil and gas associations, allied trade organizations and a great school of petroleum engineering at the University of Tulsa.

The directorate of the National Bank of Tulsa, experienced in every phase of the oil and gas industry, is as follows:

E. I. Hanlon, chairman, who started his career in the oil business thirty years ago in Sistersville, West Virginia, is president of Henaghan and Hanlon, and chairman of the board of Hanlon-Buchanan, Incorporated. He has various other connections in the oil and gasoline business.

A. E. Bradshaw, president, has been actively engaged in the banking business in Tulsa since 1901, and is recognized as an outstanding banker and executive.

H. G. Barnard, investments; Edward H. Chandler, general counsel, Sinclair-Prairie Companies; J. A. Chapman, capitalist; T. A. Creekmore, president, Summit Drilling Company; J. E. Crosbie, president, J. E. Crosbie, Inc.; J. C. Denton, vice-president, Mid-Continent Petroleum Corporation; John H. Dunkin, secretary and treasurer, Brown-Dunkin Company; Joseph L. Hull, counsel, National Bank of Tulsa; J. J. Larkin, president, Larkin Torpedo Company; T. S. Loffland, president, Loffland Brothers Company; P. M. Miskell, general manager refining division, Empire Oil and Refining Company; A. H. Rogers, financial secretary, J. A. Chapman and H. G. Barnard; Charles A. Steele, Attorney-at-Law; C. H. Sweet, vice-president, National Bank of Tulsa; C. J. Wrightsman, Oil Producer.

NATIONAL BANK OF TULSA известен как "Нефтяной Банк Америки". Этот банк заслуженно гордится тем доминирующим положением, которое он занимает, как первенствующая финансовая организация нефтяной промышленности.

При основном капитале в 8.000.000 дол. и общем капитале в 45.000.000 дол., этот банк имеет возможность обслуживать нужды нефтепромышленников, нефтеперегонщиков и поставщиков нефти и нефтепродуктов.

NATIONAL BANK OF TULSA имеет клиентов в каждом большом нефтяном предприятии Соединенных штатов, а также во многих заграничных странах, добывающих нефть. Город Tulsa является центром сотни нефтяных компаний, центром фабрикантов нефтяного оборудования и поставщиков такового и центром других индустрий, тесно связанных с нефтяными делами. В городе Tulsa бывает Интернациональная Нефтяная Выставка, также находятся наиболее крупные нефтяные и газовые ассоциации, торговые организации, связанные с нефтью, а также университет города Tulsa (University of Tulsa), имеющий специальный нефтяной отдел.

Директорат банка NATIONAL BANK OF TULSA, блестяще осведомленный и опытный во всех отраслях нефтяной и газовой промышленности, состоит на следующих лиц:

Э. И. Hanlon, председатель правления, начал свою карьеру в нефтяной промышленности тридцать лет тому назад в Sistersville, West Virginia. Он также является президентом Henaghan and Hanlon и председателем правления Hanlon-Buchanan, Incorporated.

Кроме того, он имеет многочисленные связи в других отраслях нефтяной и газолиновой промышленности.

А. Е. Bradshaw — президент, активно связан с банковской отраслью в Тулсе с 1901 года и признан, как выдающийся банкир и руководитель.

Н. G. Barnard, финансовые операции; Edward H. Chandler, юрист-консул Sinclair-Prairie Companies; J. A. Chapman, финансист; T. A. Creekmore, президент Summit Drilling Company; J. E. Crosbie, президент J. E. Crosbie, Inc.; J. C. Denton, вице-президент Mid-Continent Petroleum Corporation; John H. Dunkin, секретарь и казначей Brown-Dunkin Company; Joseph L. Hull, адвокат National Bank of Tulsa; J. J. Larkin, президент Larkin Torpedo Company; T. S. Loffland, президент Loffland Bros. Company; P. M. Miskell, управляющий нефтеперегонным отделом Empire Oil & Refining Company; A. H. Rogers, финансовый секретарь, J. A. Chapman & H. G. Barnard; Charles A. Steele, юрист; C. H. Sweet, вице-президент National Bank of Tulsa; C. J. Wrightsman, нефтепромышленник.

El National Bank of Tulsa se conoce bajo el sobrenombre de "banco petrolero de los Estados Unidos". Y tiene sobrada razón para sentirse orgulloso del puesto eminente que ha adquirido en esta industria, como su institución bancaria más importante.

Con un capital de $8.000.000 y recursos totales de más de $45.000.000, los diversos servicios y remificaciones de este banco dan satisfacción máxima a todos los requisitos de los productores, refinadores y comerciantes de petróleo y productos derivados.

Los clientes del National Bank of Tulsa se hallan dispersados en todos los campos petrolíferos de importancia de los Estados Unidos, lo mismo que en un gran número de países extranjeros productores de petróleo. Tulsa es el centro de centenares de compañías petroleras y de industrias íntimamente relacionadas con el petróleo. Tulsa es el centro de la Exposición Internacional del Petróleo, de la mayor parte de las asociaciones importantes de petróleo y de gas natural y del mayor grupo de comerciantes diversos en este ramo. En esta ciudad se halla también una importante escuela de tecnología petrolífera unida a la Universidad de Tulsa.

El personal administrativo del National Bank of Tulsa, perfectamente versado sobre las diversas fases de la industria del petróleo y gas natural, cuenta entre sus jefes, personas muy conocidas en el país, que son las siguientes:

E. I. Hanlon, presidente, que comenzó su carrera en el negocio de petróleo hace más de treinta años, en Sistersville, West Virginia. Es el presidente de la firma de Henaghan & Hanlon, y también el presidente del concejo administrativo de la Hanlon-Buchanan, Incorporated. Desempeña importantes puestos en la industria petrolera y negocio de gasolina.

A. E. Bradshaw, presidente director, ha estado activamente dedicado a negocios bancarios en Tulsa desde 1901 y es conocido como banquero y organizador de primer orden.

H. G. Barnard, inversiones; Edward H. Chandler, concejero general de la Sinclair-Prairie Companies; J. A. Chapman, capitalista; T. A. Creekmore, presidente de la Summit Drilling Company; J. E. Crosbie, presidente de la J. E. Crosbie, Inc.; J. C. Denton, vicepresidente de la Mid-Continent Petroleum Corporation; John H. Dunkin, secretario y tesorero de la Brown-Dunkin Company; Joseph L. Hull, concejero del National Bank of Tulsa; J. J. Larkin, presidente de la Larkin Torpedo Company; T. S. Loffland, presidente de la Loffland Brothers Company; P. M. Miskell, director general del servicio de refinería de la Empire Oil and Refining Company; A. H. Rogers, secretario de finanzas de J. A. Chapman y H. G. Barnard; Charles A. Steele, abogado; C. H. Sweet, vicepresidente del National Bank of Tulsa y C. J. Wrightsman, productor de petróleo; todas estas distinguidas personas forman parte de la junta directiva.

La National Bank of Tulsa est connue sous le nom de "La Banque Pétrolière des Etats-Unis," et elle est, à juste raison, fière de la position éminente qu'elle s'est acquise dans la branche comme l'institution financière la plus importante de l'industrie pétrolière.

Disposant d'un capital de $8.000.000 et de ressources totales représentant plus de $45.000.000, les divers services et ramifications de cette banque donnent un maximum de satisfaction à tous les besoins des producteurs, raffineurs et commerçants en pétrole et en ses sous-produits.

Les clients de la National Bank de Tulsa se trouvent dispersés dans tous les champs pétroliers d'importance aux Etats-Unis, ainsi que dans un grand numbre des pays étrangers producteurs de pétrole. Tulsa est le siège de centaines de compagnies pétrolifères, de fabricants d'équipement pétrolier, de compagnies d'accessoires pour l'industrie pétrolifère, et d'industries se rattachant intimement à la branche du pétrole. Tulsa est le centre de l'Exposition Internationale du Pétrole, de la majorité des associations importantes de pétrole et de gaz naturel, de groupes commerciaux divers et d'une importante école de technologie pétrolifère à l'Université de Tulsa.

Le personnel dirigeant de la National Bank de Tulsa, très versé dans les diverses phases de l'industrie du pétrole et du gaz naturel, compte dans ses rangs les personnalités suivantes:

E. I. Hanlon, président, qui a commencé sa carrière dans la branche pétrolifère il y a déjà trente ans, à Sistersville, West Virginia; il est président de Henaghan & Hanlon, et aussi président du conseil d'administration de Hanlon-Buchanan, Incorporated. Il remplit de nombreux postes dans l'industrie du pétrole et de l'essence.

A. E. Bradshaw, président-directeur, est activement engagé dans les affaires de banque de Tulsa depuis 1901, et est reconnu comme un banquier et un organisateur de premier ordre.

H. G. Barnard, placements; Edward H. Chandler, conseil général, Sinclair-Prairie Companies; J. A. Chapman, capitaliste; T. A. Creekmore, président, Summit Drilling Company; J. E. Crosbie, président; J. E. Crosbie, Inc.; J. C. Denton, vice-president, Mid-Continent Petroleum Corporation; John H. Dunkin, secretaire et trésorier, Brown-Dunkin Company; Joseph L. Hull, conseil, National Bank of Tulsa; J. J. Larkin, président, Larkin Torpedo Company; T. S. Loffland, président, Loffland Brothers Company; P. M. Miskell, directeur général du service raffinage; A. H. Rogers, secretaire des finances; J. A. Chapman & H. G. Barnard; Charles A. Steele, Avocat; C. H. Sweet, vice-président, National Bank of Tulsa; C. J. Wrightsman, Producteur de pétrole.

NATIONAL BANK OF TULSA—TULSA, OKLAHOMA, U. S. A.

JARECKI MALLEABLE IRON FITTINGS

Jarecki Malleable Iron Fittings are made of air furnace refined malleable iron possessing 20% to 25% greater tensile strength and elongation than ordinary cupola-melted malleable fittings.

Jarecki Fittings have perfect clean-cut threads, accurate as to size and alignment. All screwed fittings are recessed to permit easy entrance of pipe and to protect the threads.

Modern equipment, strict laboratory supervision of materials, continuous inspection of manufacturing operations both as to accuracy of dimensions and quality of finish, together with rigid final inspection and testing, assure that Jarecki Malleable Fittings merit every confidence.

WORKING PRESSURES: Jarecki Standard Malleable Fittings (left in photograph), are for steam working pressures up to 150 lbs., oil, water and gas pressures up to 200 lbs. Jarecki Refinery Oil Malleable Fittings (middle) are for steam pressures up to 175 lbs., oil, water and gas pressures up to 200 lbs. Jarecki Heavy Oil Malleable Fittings are for steam pressures from 250 to 300 lbs., and for oil, water and gas pressures from 600 to 2,000 lbs., depending upon size.

Арматура Jarecki изготовляется из ковкого чугуна, полученного в воздушной печи и обладающего от 20% до 25% большей сопротивляемостью на разрыв и большим пределом упругости, чем ковкий чугун, полученный в обыкновенной вагранке.

Арматура Jarecki имеет превосходную и чистую резьбу точного размера и правильного расположения. Вся арматура, снабженная резьбой, имеет заточку, которая облегчает вход трубы в арматуру и оберегает резьбу от порчи.

Новейшее оборудование, точное лабораторное исследование материалов, непрерывная инспекция процессов производства как в смысле аккуратности размеров, так и в смысле качества обработки,—все это взятое вместе со строгой инспекцией и строгим испытанием законченных продуктов, создает полное доверие к качеству арматуры Jarecki из ковкого чугуна.

РОБОЧЕЕ ДАВЛЕНИЕ: стандартная арматура Jarecki из ковкого чугуна (см. фотографию слева), пригодна для рабочего давления пара до 150 англо-фунтов, а нефти, воды или газа до 200 англо-фунтов. Арматура Jarecki из ковкого чугуна для нефтеперегонных заводов. (изображенная на середине) пригодна для рабочего давления пара до 175 англо-фунтов, а нефти, воды или газа до 200 англо-фунтов. Арматура Jarecki тяжелого типа пригодна для давления пара от 250 до 300 англо-фунтов, а нефти, воды или газа от 600 до 2000 англо-фунтов, в зависимости от размеров.

Los accesorios Jarecki de hierro maleable se hacen de hierro maleable refinado en horno de reberbero, que posee una resistencia a la tracción y una propiedad de alargamiento de 20% a 25% más grandes que los accesorios maleables ordinarios fundidos por derretimiento en moldes de cúpola.

Los accesorios Jarecki poseen una rosca muy precisa, hecha con tarraja, exacta en tamaño y en alineación. Todos los accesorios roscados están encastrados a fin de permitir la introducción facil de la tubería y asegurar una protección eficaz a la misma rosca.

Un equipo fabril moderno, un control riguroso del material en el laboratorio, una supervigilancia continua de todas las operaciones de la fabricación, tanto en lo tocante a la exactitud de las dimensiones como en lo referente a la calidad del producto terminado, y finalmente, una inspección prolija acomppañada de diversos ensayos, hacen que los accesorios de hierro maleable Jarecki sean dignos de toda confianza.

PRESIONES DE TRABAJO: Los accesorios de hirro maleable Jarecki de tipos corrientes (a la izquierda en la fotografía) sirven para presiones efectivas de vapor hasta 150 libras, para presiones de petróleo, de agua y de esencia hasta 200 libras. Los accesorios de hierro maleable Jarecki para refinerías de petróleo (al centro de la fotografía) sirven para presiones de vapor hasta 175 libras, y para presiones de petróleo, de agua y de esencia o gasolina hasta 200 libras. Los accesorios de hierro maleable Jarecki para petróleos crudos sirven para presiones de vapor de 250 a 300 libras, y para presiones de petróleo, de agua y de gasolina de 600 a 2000 libras, de acuerdo con el tamaño.

Les Garniturues Jarecki en Fer Malléable, sont fabriquées à partir de fer malléable raffiné au four à réverbère, fer possédant une résistance à la traction et un pouvoir d'allongement de 20% à 25% plus grands que ceux des granitures malléables ordinaires fondues au cubilot.

Les garnitures Jarecki possèdent un filetage à taraudage net et impeccable, exactement à la cote et d'un alignement d'une grande précision. Toutes les garnitures vissés sont encastrées afin de permettre l'introduction facile de tuyaux et d'assurer une protection efficace au filetage.

Un outillage moderne, un contrôle rigoureux du matériel au laboratoire, une surveillance de tous les instants des opérations de fabrication tant pour l'exactitude des cotes que pour la qualité du produit fini, enfin une inspection finale rigoureuse et des essais multipliés, font que les garnitures malléables Jarecki se sont gagné la confiance générale.

PRESSIONS DE MARCHE: Les garnitures malléables standard Jarecki (à gauche sur la photographie) sont destinées à des pressions de marche allant jusqu'à 150 lbs., à des pressions de détrole, d'eau et d'essence allant jusqu'à 200 lbs. Les garnitures malléables Jarecki à pétrole pour raffineries (photo du milieu) sont destinées à des pressions de vapeur jusqu'à concurrence de 175 lbs., à des pressions de pétrole, eau et essence jusqu'à concurrence de 200 lbs. Les garnitures malléables Jarecki pour pétroles lourds sont appelées à supporter des pressions de vapeur allant de 250 à 300 lbs., et des pressions de pétrole, eau et essence allant de 600 à 2000 lbs., variant selon la grandeur.

JARECKI MFG. CO.
General Offices: ST. LOUIS, MO., U.S.A.

AUER LEATHERS AND LEATHER PRODUCTS

America's Quality Leather Cup

The Auer family has been engaged in tanning for generations and Auer leather products set the standard for quality because of our long and expert knowledge of leather. This firm has manufactured high grade packings from leather since 1880 and is now the largest maker of special Oil Industry packings. Its products are known the world over.

Our best known products are Seep Cups and Star Cups. Seep Cups are made from tough selected oak leather bends and are hard but pliable. Star Cups are made from oak leather, are slightly softer and lower in price. We also make a full line of leather specialties including gaskets and packings. Our stock of Seep and Star valve cups numbers 200,000 in all sizes.

Семья Ауер втечение поколений занималась дублением кожи. Благодаря нашему долголетнему опыту кожаные изделия Ауер отличаются прекрасным качеством. Эта фирма с 1880 года занимается изготовлением высококачественных набивок из кожи, и в настоящее время является самым крупным производителем специальных набивок, применяемых в нефтяной индустрии. Ее изделия известны по всему миру.

Нашими наиболее известными продуктами являются манжеты марок Seep и Star. Манжеты Seep сделаны из грубой отобранной кожи, они тверды, но вместе с тем гнутся. Манжеты Star сделаны из более мягкой кожи и цена их более дешевая. Кроме того, мы изготовляем всевозможные специальные предметы из кожи, включая прокладки и набивки. На нашем складе имеется 200.000 манжет Seep и Star всех размеров.

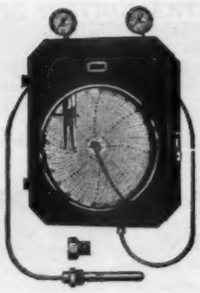
La firma Auer se ha dedicado a la curtiembre de cueros desde hace varias generaciones. Los artículos de cuero de marca Auer constituyen la norma de calidad, por excelencia, gracias a la gran experiencia y profundos conocimientos tecnológicos que nosotros poseemos en la industria. Esta firma fabrica empaquetaduras de cuero se superior calidad, desde 1880, y es actualmente la fábrica más importante de empaquetaduras especiales para la industria petrolera. La marca Auer es conocida en todo el mundo por la calidad de sus empaquetaduras.

Nuestros artículos más conocidos nuestras tazas de filtración y nuestras tazas en forma de estrella. Las tazas del primer tipo se fabrican de cuero curtido con cáscara de roble, muy firme y durable, escogido con mucho cuidado, en atención a su flexibilidad y solidez. Las tazas en forma de estrella son también de cuero curtido con cáscara de roble, pero son menos curas que las anteriores, ofreciéndose a precios más bajos. Fabricamos también un surtido completo de especialidades de cuero, comprendiendo uniones y empaquetaduras. Nuestro surtido de tazas de válvulas de ambos tipos comprende como 200.000 de todas dimensiones.

La maison Auer s'occupe de tannage depuis de nombreuses générations, et les articles de cuir Auer constituent le standard de qualité par excellence, grâce à la longue expérience et aux grandes connaissances technologiques que nous possédons dans la branche des cuirs. Cette maison fabrique des garnitures de qualité supérieure, à partir de cuir, depuis 1880, et est, à l'heure actuelle, le plus important fabricant de garnitures spéciales pour l'industrie pétrolifère. La marque Auer est connue dans le monde entier pour ses garnitures.

Nos articles les plus connus sont les Godets Type à Suintage et les Godets en forme d'étoile. Les godets du premier type sont fabriqués à partir de cuir recourbé, résistant, tanné à l'écorce de chêne, choisi avec soin de façon à réunir flexibilité et solidité. Les godets "étoile" sont aussi fabriqués à partir de cuir traité à l'écorce de chêne, mais ils sont un peu moins durs que les précédents et sont offerts à des prix plus bas. Nous fabriquons aussi un assortiment complet de spécialités de cuir, y compris des joints et des garnitures. Notre stock de godets de soupape des types à suintage et étoile se chiffre à 200.000, en toutes grandeurs.

C. L. & W. W. AUER
CORRY, PA., U.S.A.



An air-operated recording regulator so versatile that *practically any character of process control can be obtained, regardless of time lag in apparatus, by a simple screw driver adjustment on a graduated dial . . . without requiring a skilled operator or interruption of service.

Easily changed from direct to reverse-acting, or vice versa . . . no extra parts.

Compensates for fluctuations in air-pressure supply. Die-cast case; dust, moisture and fume-proof.

Available forms: for controlling temperature, pressure, temperature and pressure, rate of flow, liquid level.

*Where extreme load changes or badly balanced operating conditions exist, the TAYLOR "DUBL-RESPONSE CONTROL UNIT" is the only positive means of maintaining control-point.

Этот самозаписывающий регулятор, работающий воздухом, настолько гибок, что им можно контролировать почти любой процесс производства, независимо от чувствительности остальных аппаратов. Регулировка его производится простой отверткой, причем на аппарате имеется циферблат. Для этой регулировки не требуется особых знаний или перерыва в работе.

Весь механизм значительно усовершенствован. Его легко поставить с прямого на обратный ход или наоборот, — для этого не требуется дополнительных частей.

Он работает правильно и при переменном давлении подаваемого воздуха.

Кожух аппарата отлит под давлением; он непроницаем для пыли, сырости и газов.

Регулятор изготовляется следующих типов: для контроля температур; давлений; температур и давлений; количества протекаемой жидкости, и для контроля уровней жидкости.

Там где имеется большая перемена нагрузок или процесс производства плохо отбалансирован,—регулятор TAYLOR "DUBL - RESPONSE CONTROL UNIT" является единственным аппаратом для установления контроля.

Un regulador registrador neumático tan útil que practicamente se puede obtener con él cualquier procedimiento de regulación, sin atender a *atrasos* en el tiempo en los aparatos, simplemente usando de un detornillador de ajuste en una esfera graduada . . . sin que sea necesaria ninguna habilidad por parte del personal y sin interrumpir el servicio.

Grandes perfeccionamientos en todo el mecanismo.

Fácilmente se cambia de la acción directa a la inversa y *viceversa*—no tiene otras piezas extraordinarias.

Formas disponibles: Para regular temperaturas, presión, temperatura y presión, nivel de los liquidos y flujo de éstos.

En donde las condiciones son de cambios extremos en las cargas o muy descompensadas la TAYLOR "DUBL-RESPONSE CONTROL UNIT" es el único medio positivo de mantener el punto regulador.

Un régulateur enregistreur pneumatique d'une utilité si variée qu'on peut l'employer pour tout genre de contrôle de procédé, sans tenir compte du *retard* dans l'appareil, au moyen d'un ajustage simple an tournenis sur un cadran gradué —sans nécessiter l'intervention d'un technicien ou l'interruption de service.

Perfectionnements considérables au mécanisme entier.

Se change facilement de l'action directe à l'action inversée et *vice-versa*—sans addition d'aucune pièce.

Compense les fluctuations dans d'alimentation de la pression d'air.

Boite coulée sous pression; à l'épreuve de la poussière, de l'humidité et des fumées.

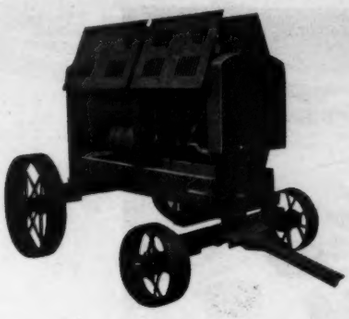
Modèles disponibles: Pour le contrôle des températures, de la pression, de la température et de la pression, de la vitesse de la circulation, du niveau du liquide.

Dans les cas où il existe des conditions extrêmes dans la charge ou des conditions mal équilibrées, la TAYLOR "DUBL-RESPONSE CONTROL UNIT" constitue le seul moyen positif de maintenir le point régulateur.

Write for Literature.

TAYLOR INSTRUMENT COMPANIES
Rochester, New York, U.S.A.

Motor Driven



Gasoline Engine Driven

LINCOLN "SHIELD ARC" WELDERS

Many exclusive patented features permit THE LINCOLN ELECTRIC COMPANY to make the following 3-way guarantee of welding with a "Shield-Arc" Welder:

(1) More weld deposit per kw. hr.
(2) Faster welding per kw. hr.
(3) Lower cost per unit of welding—the unit being per lineal foot of weld, or per pound of weld metal, or per hour of welding.

More Lincoln welders are used in oil fields, refineries and for pipe line construction and maintenance than any other arc welding machine.

Built in gasoline engine driven, A. C. and D. C. motor driven, belt driven, single operator variable voltage types in 300, 400 and 600 amp. sizes, N.E.M.A. rating at 40 volts. Two operator engine driven types are available in 400 and 600 ampere sizes. All machines supply uniform welding current for metallic arc welding with bare or heavily coated (shielded arc type) electrodes. Also for carbon arc welding and cutting. Generator control mechanism enclosed in steel cabinet with center reading combination voltammeter, generator field rheostat, current regulating switch and polarity reversing switch mounted on "dead front" panel of cabinet. Gasoline engine driven types are totally enclosed by pressed steel canopy equipped with hinged panels spring fastened. Generator direct connected to engine. Patented Lincoln idling device permits engine to idle when not welding. Engine speed automatically increases to properly govern speed upon striking the arc. Adjustable time lag is provided for changing electrodes without deceleration of engine. This feature saves up to 35 per cent in fuel consumption as well as oil consumption and wear on engine. Four different types of running gear can be supplied for these models.

"Lincontrol", a patented remote control device, attached to control panel for automatic regulation of welding current from point of welding, without use of extra cables or portable accessories, supplied as optional equipment on all models.

Lincoln welders are also built in 75, 100 and 200 ampere sizes, A. C. and D. C. motor driven types; in 100 and 200 ampere sizes, belt driven types; also 200 ampere gasoline engine driven type.

Благодаря многим исключительным и патентованным достоинствам сварочных аппаратов Shield-Arc, фирма LINCOLN ELECTRIC COMPANY в состоянии дать следующие гарантии:

1) Получение большего количества отлагаемого сварочного металла на киловатт-час.

2) Достижение более быстрой сварки на киловатт-кас.

3) Получение более низкой стоимости единицы сварки. — Под единицей сварки понимается линейный фут сварки, или фунт отлагаемого сварочного металла, либо час сварочных работ.

Сварочные аппараты Lincoln применяются на нефтяных промыслах, нефтеперегонных заводах и при прокладке и обслуживании нефтепроводов более широко, чем какие-либо другие сварочные аппараты.

Они строятся с приводом от газолинового мотора, от электро-мотора переменного и постоянного тока, с ременным приводом, для оперирования одним рабочим, с варьирующим вольтажем, на 300, 400 и 600 ампер, при 40 вольтах нормы N.E.M.A. (Национальная Ассоциация Фабрикантов Электрооборудования). Сварочные аппараты с газолиновыми моторами, для работы двумя операторами изготовляются размерами в 400 и 600 ампер. Все машины дают равномерный ток для металлической сварочной дуги с открытыми электродами, или с электродами, покрытыми толстой обмоткой (Shielded-Arc type). Также для сварки или обрезки угольной дугой. Контрольный механизм генератора, заключенный в стальном ящике, имеет центральный комбинированный вольтамметер, генераторный полевой реостат, включатель для регулировки тока и включатель для реверсирования полюсов. Эти аппараты монтированы на передней панели ящика.

Машины с газолиновыми двигателями совершенно закрыты навесами из прессованной стали с панедями на петлях; навесы укрепляются пружинами. Генератор непосредственно соединен с двигателем.

Патентованное ослабляющее приспособление Lincoln уменьшает ход двигателя во время прекращения сварочных работ. Скорость двигателя автоматически увеличивается до необходимой, как только сварочная дуга начинает работать Имеется достаточный промежуток времени для перемены электродов без остановки двигателя. Этим уменьшается до 35 процентов расход топлива и масла, а также уменьшается и износ двигателя. Машины этой модели могут быть снабжены ведущими шестернями четырех разных типов.

"Lincontrol" есть патентованное контрольное приспособление, укрепляемое на контрольной панели для автоматической регулировки сварочного тока от места сварки, без применения добавочных кабелей, или переносных аппаратов. Он поставляется, по желанию заказчика, со всеми машинами в виде дополнительного оборудования.

Сварочные аппараты Lincoln также строятся размерами в 75, 100 и 200 ампер с электродами для переменного и постоянного тока; размерами 100 и 200 ампер с ременным приводом; размером в 200 ампер с газолиновым двигателем.

Varias caracteristicas patentadas y exclusivas de la marca, permiten a la Lincoln Electric Company dar la triple garantía siguiente de soldadura, por medio de su máquina soldadora de tipo llamado "arco protegido":

(1) Un mayor depósito de soldadura por kw.h.
(2) Una soldadura más rápida por kw.h.
(3) Un costo menos elevádo por unidad de soldadura, dándose por base un pié lineal de soldadura o una libra de metal de soldadura o cantidad de soldadura por hora.

Un mayor número de máquinas soldadoras Lincoln se emplea en los campos petrolíferos, refinerías de petróleo y en la construcción y conservación de canalizaciones o tuberías, que de toda otra máquina de soldar de tipo de arco.

El surtido ofrecido comprende modelos accionados por motor de gasolina, de tipo sencillo por motor eléctrico de corriente contínua o alternada, por correa transmisora, por fuerza de voltaje vaiable de 300, 400 y 600 amperios y régimen N.E.M.A. de 40 voltios. Tambien se ofrecan estas máquinas con funcionamiento por motor de gasolina, de tipo doble, para 400 y 600 amperios. Todas estas máquinas suministran una corriente uniforme para soldadura metálica de arco, con electrodos desnudos o con electrodos provistos de grueso revestimiento (tipo de arco protegido). Se emplean también para soldadura de arco al carbono y trabajo de cortar. El mecanismo de control del generador está encerrado en una caja de acero, con voltímetro central de combinación de lectura, rheóstato inductor de generador, conmutador regulador de corriente y conmutador de inversión de polaridad montados sobre el panel "sin tensión" de la caja. Los modelos accionados por motor de gasolina están completamente encerrados por una tapa de acero estampado y van provistos de paneles abisagrados que se retienen mediante resortes. El dinamo está directamente acoplado al motor. Un dispositivo patentado por la Lincoln para regular la velocidad, permite al motor funcionar a un muy poca velocidad mientras la máquina no está soldando. La velocidad del motor aumenta automáticamente hasta que se obtiene la marcha más adecuada a la formación del arco. Un dispositivo de regulación de retardo se ha provisto para poder cambiar los electrodos sin tener que retardar la velocidad del motor. Esta última caracteristica se traduce en economia de consumo de combustible, que llega hasta 35%, además de economia en consumo de lubricante y menos desgaste de motor. Cuatro modelos de tren rodante pueden suministrarse para estas máquinas.

"Lincontrol", un dispositivo patentado para la regulación automática a distancia, se halla fijo en panel de control, para el gobierno automático de la corriente de soldar hasta el punto de la soldadura, sin necesidad de emplear cables suplementarios u otros accesorios portátiles. Este dispositivo se suministra como equipo adicional, a precio extra, con todos los mdelos.

Las máquinas soldadoras "Lincoln" se construyen también en modelos de 75, 100 y 200 amperios, accionados por motores eléctricos de corriente continue o alternada, en modelos de 100 y 200 amperios con transmisión por correa y en modelo de 200 amperios accionado por motor de gasolina.

De nombreuses caractéristiques brevetées, exclusives à la marque, permettent à la LINCOLN ELECTRIC COMPANY, de donner la triple garantie suivante de soudage, au moyen de la machine à souder dite à "Arc Abrité":

(1) Un dépôt de soudure plus fort par kw-h.
(2) Une soudure plus rapide par kw-h.
(3) Un prix de revient moins élevé par unité de soudage—l'unité étant par pied linéaire de soudure, ou par livre de métal à souder, ou encore par heure de soudage.

Un plus grand nombre de machines à souder Lincoln s'emploient dans les champs pétrolifères, les raffineries de pétrole et la construction et l'entretien des canalisations que toute autre machine à souder à arc.

L'assortiment offert comprend des modèles inamovibles actionnés par moteur à essence, par moteur électrique C.A. ou C.C., à transmission de courroie, à voltage variable et opérateur unique, dans les grandeurs de 300, 400 et 600 ampères, et régime N.E.M.A. à 40 volts. Il est offert en outre des modèles actionnés par moteur à essence, à deux opérateurs, en grandeurs de 400 et 600 ampères. Toutes ces machines fournissent un courant uniforme de soudage pour la soudure métallique à arc, avec électrodes nues ou à enrobage épais (type à arc abrité). Elles s'emploient aussi pour la soudure à arc au carbone et le découpage. Le mécanisme de contrôle du générateur est enfermé dans un coffre en acier, avec voltamètre central à combinaison de lecture, rhéostat inducteur de générateur, commutateur régulateur de courant, et commutateur inverseur monté sur le panneau "sans tension" du coffre. Les modèles actionnés par moteur à essence sont complètement enfermés par des dais en acier estampé, équipés avec des panneaux à charnières fixés au moyen de ressorts. La dynamo est reliée directement au moteur. Un dispositif breveté Lincoln pour fonctionnement au ralenti permet de faire marcher le moteur au ralenti chaque fois qu'on interrompt le soudage. La vitesse du moteur augmente automatiquement afin d'atteindre la vitesse appropriée dès que l'on produit l'arc. Un dispositif de réglage de retard est prévu afin de pouvoir changer les électrodes sans devoir ralentir le moteur. Cette dernière caractéristique se tranduit par une économie de consommation de carburant pouvant atteindre 35 pour cent, accompagnée d'une économie de consommation d'huile et d'une moindre usure du moteur. Il peut être fourni quatre modèles différents de rtain roulant sur ces modèles.

"Lincontrol", un dispositif breveté de commande à distance, fixé au panneau de contrôle pour le réglage automatique du courant de soudage du point de soudure, sans avoir besoin d'employer de câbles supplémentaires ou d'accessoires portatifs, est fourni sur tous les modèles offerts, à titre d'équipement facultatif.

Les machines à souder "Lincoln" sont aussi construites en grandeurs de 75, 100 et 200 ampères, modèles actionnés par moteurs électriques C.A. et C.C.; en grandeurs de 100 et 200 ampères, modèles à transmission de courroie; aussi un modèle de 200 ampères actionné par moteur à essence.

THE LINCOLN ELECTRIC COMPANY, CLEVELAND, OHIO, U.S.A.

Largest Manufacturers of Arc Welding Equipment in the World

This picture shows one of the complete petroleum refineries erected by Arthur G. McKee & Co. The McKee organization designs and constructs complete petroleum refineries or individual process units.

Process units designed and built by the McKee Company include in part:

Pipe still distillation units
Pressure distillate rerun units
Continuous gasoline treating plants
Kerosene treating plants
Lubricating plants
Bright stock plants
Vacuum distillation units
Vapor recovery plants
Heat exchangers
Gasoline stabilizing plants
Boiler plants
Power plants
Bubble towers
Condensers
Heaters and coolers

McKee also constructs cracking plants under the rights granted by the Licensor to the Licensee. It has the full cooperation of Universal Oil Products Company, owner and licensor of the Dubbs cracking process and has designed and built more Dubbs cracking units than any other Contractor.

In Italy, this company is associated with Impianti Petroli S.A., Milan.

На иллюстрации изображен один из комплектных нефтеперегонных заводов, построенных фирмой ARTHUR G. McKEE & CO. Организация McKEE проектирует и строит комплектные нефтеперегонные заводы и установки для индивидуальных процессов.

Различные установки, спроектированные и построенные фирмой ARTHUR G. McKEE & CO., частично перечислены ниже:

Нефтеперегонные трубчатые установки
Установки для вторичной перегонки дистиллатов под давлением.
Установки для непрерывной очистки газолина.
Установки для очистки керосина.
Масляные заводы.
Заводы для получения светлых масел (Bright Stock).
Вакуумные нефтеперегонные установки.
Установки для перегонки в паровой фазе.
Теплообменные аппараты.
Заводы для стабилизации газолина.
Котельные установки.
Силовые установки.
Фракционирующие башни.
Конденсаторы.
Подогреватели и холодильники.

Фирма McKEE также строит крекинговые установки, на основании патентных лицензионных прав, даваемых патентодержателями.

Фирма McKEE имеет полную кооперацию фирмы Universal Oil Products Co., которая является владельцем патента и имеет лицензию на крекинговый процесс Dubbs'a, причем фирма McKEE спроектировала и построила большее количество крекинговых установок Dubbs'a, чем какой-либо другой контрактор.

В Италии фирма McKEE связана с фирмой Impianti Petroli S. A., Milan.

Mostramos en esta vista una de las refinerías completas de petróleo construídas por Arthur G. McKee & Co. La organización McKee proyecta y construye refinerías completas de petróleo o elementos separados para las mismas.

Entre los elementos para refinerías de petróleo que proyecta y construye la compañía McKee se hallan los siguientes:

Alambiques tubulares de destilación.
Grupos de destilación secundaria bajo presión.
Plantas de tratamiento continuo de gasolina.
Plantas de tratamiento de keroseno.
Plantas productoras de lubricantes.
Plantas de productos derivados.
Equipos de destilación por vacío.
Plantas de recuperación de vapor.
Cambiadores de calor.
Plantas estabilizadoras de gasolina.
Equipo de calderas.
Centrales de fuerza.
Torres de burbujeo.
Condensadores.
Calentadores y enfriadores.

La McKee construye también plantas de explotación por el sistema "cracking" bajo permiso del dueño de las patentes.

Cuenta con toda la cooperación de la Universal Oil Products Company, dueña de las patentes sobre el procedimiento de separación "cracking" Dubbs. Ha proyectado y construído más plantas de explotación por el procedimiento Dubbs que toda otra compañía.

En Italia, esta compañía está asociada a la Impianti Petroli, S. A. de Milán.

La gravure ci-contre représente une des installations complètes de raffinerie montées par Arthur G. McKee & Co. La maison McKee étudie et construit des installations complètes de raffinerie, ainsi que les éléments séparés de ces installations.

Les divers éléments de raffinerie de pétrole étudiés et construits par la McKee Company comprennent les principaux appareils suivants:

Alambics tubulaires de distillation
Appareils de distillation secondaire sous pression
Installations pour le traitement continu de l'essence
Installations pour le traitement de la kérosine
Installations pour la fabrication des lubréfiants
Installations pour la préparation des produits dérivés
Appareils de distribution par le vide
Installations pour la récupération des vapeurs
Echangeurs de chaleur
Stabilisateurs d'essence
Installations de chaudières
Centrales d'énergie
Tours de barbotage
Condenseurs des gaz
Réchauffeurs et Refroidisseurs

McKee construit aussi les installations pour le 'cracking", avec licence du propriétaire des brevets.

McKee a, en outre, la coopération entière de la Universal Oil Products Company, propriétaire des brevets correspondant au procédé du "cracking" de Dubbs —McKee a mis au point et construit un plus grand nombre d'installations de cracking Dubbs que toute autre compagnie.

En Italie, cette compagnie est associée à la Impianti Petroli, S. A. à Milan.

ARTHUR G. McKEE & COMPANY

Engineers & Contractors

2422 Euclid Avenue CLEVELAND, OHIO, U.S.A.

Bush House, Aldwych, W.C.2, LONDON, ENGLAND.

IDEAL-AJAX TWIN CYLINDER DRILLING STEAM ENGINES

Ideal-Ajax Twin Cylinder Steam Engines are of very rugged construction, designed especially for oil field use. The 12x12 Engine embodies the latest type of design. The crankshaft is mounted in Heavy Roller Bearings. The Main Frame is cast in one piece insuring rigidity and alingment of all moving parts. All running parts are enclosed in a cast iron case oil tight and excluding dirt. This Engine is made in either Piston Valve or Slide Valve Type. The Piston Valve is designed especially for use with high pressure superheated steam. Steam separators with automatic trap are also furnished.

Only the highest grade material is used in the manufacture of the Ideal-Ajax Engines. All wearing parts are carefully machined and ground to precision dimensions. The Crank Shafts are alloy steel forgings and heat treated. Connecting Rods and Straps are forged from alloy steel billets. The bearings for the Crank and Crosshead Bearing Boxes are Bronze.

These engines are fully equipped including a Balanced Double Seat Throttle Valve, Force Feed Lubricator, Drain Cocks for Cylinders and Drop Forged Machine Wrenches. Copper asbestos gaskets are supplied for all steam connections.

All Engines are assembled and thoroughly tested under load before shipment. The 12x12 Engine operating at a speed of 250 R.P.M. and with 250 lbs. of steam will develop 430 Horse Power. The net weight of this engine is 14,300 lbs. and boxed for export 16,060 lbs.

14x14 engines of same type, the largest in the world for oil field drilling, can be furnished as well as 10x10, 11x11 and 12x12 in semi-closed plain bearing type.

Двухцилиндровые паровые машины Ideal-Ajax отличаются чрезвычайной прочностью и сконструированы специально для работ на нефтяных промыслах. Паровая машина 12x12, изображенная выше, представляет собою машину новейшей конструкции. Коленчатый вал работает в тяжелых роликовых подшипниках. Главная рама отлита из одного куска, что обеспечивает прочность машины и правильность взаимного расположения всех движущихся частей. Все движущиеся части заключены в закрытой чугунной коробке, не пропускающей масла, и защищены от грязи. Эти паровые машины изготовляются как с цилиндрическими, так и с плоскими золотниками. Цилиндрические золотники применяются исключительно для работы перегретым паром высокого давления. Машина снабжена сепаратором для пара с автоматическим трапом.

Паровые машины Ideal-Ajax изготовляются из материалов только самого высокого качества. Во избежание износа все рабочие части машины тщательно обработаны и отшлифованы по чрезвычайно точным размеров. Коленчатые валы откованы из стали специального сплава и термически обработаны. Шатуны и их серьги откованы из стальных болванок специального сплава. Подшипники коленчатого вала и крейцкопфа сделаны из бронзы.

Эти машины поставляются вполне оборудованными, включая отбалансированный дроссельный клапан с двойным седлом, лубрикатор с принудительной подачей масла, спускные краны для цилиндров и кованные гаечные ключи. Все паровые соединения снабжены прокладками из асбеста и меди.

Все паровые машины, перед их отправкой, собираются и всесторонне испытываются под нагрузкой. Машина 12x12 работает при 250 оборотах в минуту, при давлении пара в 250 англофунтов и развивает 430 лош. сил. Чистый вес этой машины составляет 14.300 англо-фунтов, а в экспортной упаковке 16.060 англо-фунтов.

Фирма также изготовляет паровые машины этого же типа размером 14x14, которые являются самыми большими в мире из применяемых для бурения нефтяных скважин. Кроме того, фирма изготовляет паровые машины 10x10, 11x11 и 12x12 полузакрытого типа с простыми подшипниками.

Los motores de vapor Ideal-Ajax de cilindros gemelos son de construcción muy firme y se proyectan especialmente para servicio en campos petrolíferos. El motor de 12 x 12 que mostramos en la vista superior comprende los más recientes perfeccionamientos en proyecto. El cigüeñal está montado en grandes cojinetes de rodillos. El bastidor principal es fundido en una sola pieza, lo que asegura rigidez y correcta alineación a todas las piezas móviles. Todos los organos de movimiento están protegidos en caja de hierro fundido, hermética al aceite y polvo. Este motor se ofrece en tipo de válvula de émbolo y en tipo de válvula corrediza. El modelo de válvula de émbolo se proyecta especialmente para utilizarse con vapor sobrecalentado de alta presión. Se suministran también separadores de vapor provistos de trampas automáticas.

En la fabricación de los motores Ideal-Ajax se emplean únicamente los materiales de más fina calidad. Todas las piezas expuestas a desgaste se labran cuidadosamente a máquina, esmerilándose a tamaños exactos. Los sigüeñales son de especial aleación de acero, forjados a martinete y tratados por procedimientos técnicos a propósito. Las bielas y otras piezas interiores se forjan de especial aleación de acero. Los cojinetes para el cigüeñal y las cajas del cojinete de la cruceta son de bronce.

Estos motores se suministran con un equipo completo, que comprende válvula abastecedora de doble asiento equilibrado, lubricador de alimentación bajo presión, grifos de evacuación para los cilindros y llaves de máquinas de acero estampado. Para todas las conexiones de vapor se suministran empaquetaduras de amianto y cobre.

Todos los motores se arman y ensayan prolijamente, bajo carga, antes de su embarque. El motor de 12 x 12 funcionando a una velocidad de 250 r.p.m. y con 250 libras de vapor, desarrolla 430 caballos de fuerza. El peso neto de este motor es 14.300 libras y embalado para la exportación, 16.060 libras.

Los motores de 14 x 14 del mismo tipo, los más grandes del mundo para servicio de perforación en campos petrolíferos, pueden suministrarse, lo mismo que sus compañeros de 10 x 10, 11 x 11 y 12 x 12, en tipo de cojinete semi cerrado.

Les Moteurs à Vapeur "Ideal-Ajax" à Cylindres Jumelés sont d'une construction des plus robustes, étudiés spécialement en vue de l'emploi sur les champs de pétrole. Le moteur 12 x 12, représenté sur l'illustration ci-contre, est du tout dernier modèle. Le vilebrequin en est monté sur de forts coussinets du type à rouleau. Le bâti principal est coulé d'une seule pièce, ce qui assure la rigidité et l'alignement convenables à tous les organes mobiles. Toutes les pièces mobiles sont enfermées dans un carter en fonte, absolument étanche au pétrole et à l'abri de la poussière. Ce moteur se fabrique soit du type à soupape à piston, soit du type à soupape à fourreau. Le modèle à soupape à piston a été étudié et construit spécialement pour emploi avec vapeur surchauffée à haute pression. Il est fourni également des séparateurs de vapeur qui possèdent un purgeur automatique d'eau de condensation.

On emploie, à la fabrication des moteurs Ideal-Ajax, exclusivement du matériel de qualité extra-supérieure. Toutes les pièces de frottement sont usinées avec le plus grand soin et meulées rigoureusement à la cote. Les vilebrequins sont des pièces forgées en alliage d'acier, qui ont été soumises à un traitement thermique. Les bielles et les brides sont aussi forgées à partir de billots en acier spécial. Les coussinets des cages de vilebrequin et de paliers à croisillon sont en bronze.

Ces moteurs sont équipés au complet, y compris avec soupape à papillon équilibrée à siège double, lubrificateur à alimentation sous pression, robinets de vidange pour cylindres et clefs de machine estampées. Des joints en cuivre et asbestos sont fournis pour tous les raccords à vapeur.

Tous les moteurs sont assemblés et soumis à des essais rigoureux sous charge avant d'être expédiés. Le moteur 12 x 12, qui fonctionne à une vitesse de 250 tours à la minute et avec 250 lbs. de vapeur, développera 430 chevaux vapeur. Le poids net de ce moteur est de 14.300 et, une fois mis en caisse, son poids total pour l'exportation est de 16.060 lbs.

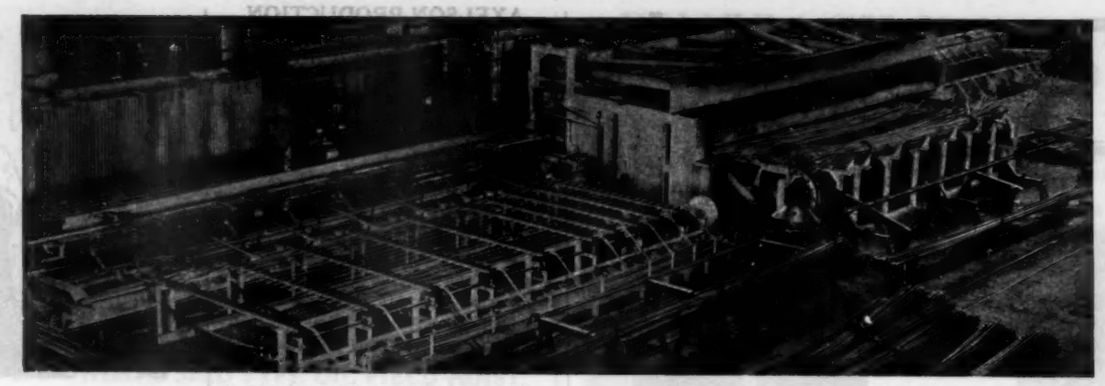
Il est aussi offert des moteurs 14 x 14 du même type, les plus grands modèles du monde pour le forage d'exploitation pétrolifère, ainsi que des moteurs 10 x 10, 11 x 11 et 12 x 12 du type à palier semi-enfermé.

AJAX IRON WORKS

CORRY, PA., U.S.A.

Distributed by

THE NATIONAL SUPPLY COMPANIES



"OILWELL'S" NEW HEAT-TREATING FURNACE AND AUXILIARY EQUIPMENT FOR THE MANUFACTURE OF FULLY HEAT-TREATED SUCKER RODS AND PULL RODS

To develop the maximum physical properties of steel sucker rods of uniform quality throughout their entire length, it is necessary to give them a full heat-treatment, that is, normalize, quench and draw from end to end in separate heats. As there was no commercial equipment suitable for performing these operations, "Oilwell" engineers and metallurgists designed, developed and built a special heat-treating furnace and auxiliary equipment, now recognized as an outstanding development for the commercial heat-treatment of long small diameter steel rods over their entire length.

The operation of this furnace, illustrated above, is extremely flexible and permits of the full commercial processing of both carbon and alloy steel rods, giving each the exact treatment required to develop the best combination of physical properties. There need be no compromise in the selection of steels or heat-treatments.

The installation consists of three units. First, the pyrometer controlled furnace in which the rods are properly heated; second, a machine which mechanically immerses or quenches the properly heated rod in a circulating fluid of correct temperature; third, a stretch straightening and proof testing machine which stretches each rod beyond its yield point at the draw-back or temper heat, that is, while hot and plastic. This last operation tests and proves each rod to be free of defects and of uniform quality throughout.

All "Oilwell" sucker rods and pull rods are made from selected fine grain steels, and upset under pyrometer control in dies that insure proper fibre flow of the metal. "Oilwell" rods can be furnished in lengths up to 30 feet (9.15 meters) and with A.P.I. boxes and pins or pin and pin types with hardened and ground oversize couplings. The high standard of "Oilwell" rods is maintained by constant supervision and trained inspectors and observers.

"Oilwell" fully heat-treated sucker rods and pull rods are regularly manufactured in all A.P.I. sizes and specifications to meet various pumping conditions. They are identified as Grade "Y," alloy steel; Grade "A," controlled fine grain carbon steel; and Grade "S," low metalloid alloy steel. All are fully heat-treated over their entire length by the process described above.

Write for Bulletin No. 128 giving complete description of "Oilwell" fully heat-treated sucker rods and pull rods.

Для того, чтобы придать стали насосных штанг наилучшие физические свойства и однородное качество по всей длине штанги, необходимо подвергнуть их полной термической обработке, т. е. пронормализировать их, отпустить и затем вытянуть от одного конца до другого. Все эти три операции нужно производить при трех разных температурах. Так как на рынке нет оборудования, пригодного для производства этих операций, то инженеры и металлурги фирмы OIL WELL сконструировали, разработали и построили специальную печь для термической обработки и дополнительные приспособления к ней. Это оборудование признается в настоящее время выдающимся для термической обработки в коммерческом масштабе длинных штанг малого диаметра по всей их длине.

Работа этой печи, изображенной выше, отличается чрезвычайной гибкостью и позволяет в полном коммерческом масштабе термически обрабатывать штанги как из углеродистой стали, так и из специальных стальных сплавов. При этом, каждый сорт стали получает как раз такую тепловую обработку, какая требуется для придания ей наилучших физических свойств. Благодаря этому получается свободный выбор стали и методов ее тепловой обработки.

Установка состоит из трех единиц: во-первых, из печи, контролируемой пирометром, в которой насосные штанги подвергаются правильному нагреву; во-вторых, из машины, которая механически погружает нагретые штанги в циркулирующую жидкость определенной температуры, и в третьих, из машины выправляющей штанги вытягиванием и испытывающей их на растяжение. Эта машина вытягивает каждую штангу при температуре закала, т. е. пока сталь горячая и гибкая, на величину меньшую предела ее упругости. Этой последней операцией испытывают каждую штангу с целью убедиться в отсутствии дефектов и в однородности качества по всей ее длине.

Все насосные штанги и насосные тяги "Oilwell" изготовляются из специально подобранных мелкозернистых сталей; концы штанг высаживаются при пирометрическом контроле температуры внутри матриц, что обеспечивает правильное расположение волокон в металле. Штанги "Oilwell" изготовляются длиной до 30 фут. (9,15 метров) и имеют либо наружную нарезку с одного конца и внутреннюю с другого, либо наружные нарезки с обоих сторон и закаленную и отшлифованную соединительную муфту большого размера, все в согласовании со стандартными А. Р. I. (Американского Нефтяного Института).

Высокое качество штанг "Oilwell" поддерживается непрерывным надзором за их производством, а также постоянной проверкой опытными инспекторами и наблюдающим персоналом.

Термически обработанные насосные штанги и насосные тяги изготовляются фирмой всех размеров и спецификаций стандарта А. Р. I., отвечающих самым разнообразным условиям работы. Они различаются между собою следующими марками: марка "Y" — для штанг из специального стального сплава, марка "A" — для штанг из мелкозернистой углеродистой стали и марка "S" — для штанг из стального сплава с малым содержанием металлоида. Все эти штанги проходят полную термическую обработку по всей своей длине при помощи процессов, описанных выше.

Требуйте бюллетень № 128, дающий исчерпывающее описание насосных штанг и насосных тяг "Oilwell", подвергнутых полной тепловой обработке.

Con el objeto de asegurar a las varillas de aspiración de acero un máximo de propiedades físicas y una calidad uniforme en toda su longitud, es necesario someterlas a un tratamiento térmico completo, que consiste en tres operaciones, que son las siguientes: normalización, temple y estiramiento longitudinal a tres temperaturas distintas. Como hasta ahora no existiera un equipo especial para efectuar estas operaciones, los ingenieros y metalurgistas de la Oil Well idearon, estudiaron y fabricaron un horno especial para el tratamiento térmico, con todos los aparatos auxiliares necesarios, que actualmente se consideran como un progreso muy notable en el tratamiento al calor de la industria de las largas y delgadas barras y varillas de acero, en toda su extensión.

El funcionamiento de este horno, ilustrado aquí, es de lo más flexible, pues permite realizar el tratamiento industrial integral de las varillas de acero al carbono lo mismo que de aquellas de aleación de acero, asegurando a cada una de ellas, el tratamiento exacto que necesita para asegurar su mejor combinación de propiedades físicas. Es decir, este horno permite una elección estricta de aceros o de tratamientos térmicos adecuados.

La instalación comprende tres grupos. En primer lugar, el horno controlado por un pirómetro, en el cual las varillas se recalientan a la temperatura deseada; en segundo lugar, una máquina que efectúa la inmersión o templado de la varilla a la temperatura deseada, en un líquido corriente, mantenido a la temperatura más conveniente, y en tercer lugar, una máquina para estirar la varilla y verificar su estiramiento, que alarga la varilla más allá de su límite de estiramiento a la temperatura de temple o de contracción, es decir, en estado plástico y en estado caliente. Esta última operación permite asegurarse de que cada varilla quede extenta de defectos y con una calidad uniforme.

Todas las varillas de aspiración y de tracción "Oilwell" se hacen de aceros de grano fino de primera calidad. Se forjan, bajo control de pirómetro, en matrices especiales, lo que asegura un conveniente escurrimiento de la fibra del metal. Las varillas "Oilwell" pueden suministrarse en longitudes hasta de 30 pies (9,15 m.) con cajas y pasadores A. P. I. o con pasadores provistos de acoplamientos de sobre tamaño endurecidos y esmerilados. La elevada norma de calidad de las varillas "Oilwell" está asegurada por la continua vigilancia, en todas las fases de su fabricación, de ingenieros especialistas.

Las varillas de aspiración y de tracción "Oilwell", sometidas a un tratamiento térmico completo, se fabrican corrientemente en modelos de todos los tamaños y especificaciones A. P. I., para hacer frente a las condiciones de servicio de bomba más variadas y exigentes. Sus denominaciones son las siguientes: calidad "Y" de aleación de acero; calidad "A" de acero al carbono de grano fino controlado; y calidad "S" de aleación de acero y metaloide poco contenido de este último. Todas las varillas, en su completa longitud, se someten al tratamiento térmico descrito arriba.

Pidanos nuestro boletín No. 128, en que damos descripción completa de estas varillas de aspiración y de tracción "Oilwell" de tratamiento térmico integral.

Afin d'assurer aux tiges d'aspiration en acier un maximum de propriétés physiques et une qualité uniforme sur toute leur longueur, il est nécessaire de leur faire subir un traitement thermique complet, consistant en trois opérations, à savoir normalisation, trempage et étirage longitudinal à trois températures distinctes. Comme il n'existait pas jusqu'ici d'appareillage industriel permettant d'offectuer ces opérations, les ingénieurs et métallurgistes "Oilwell" ont conçu, étudié et construit un four spécial pour traitement thermique avec appareillage auxiliaire, qui sont maintenant reconnus comme un progrès décisif dans le traitement thermique de l'industrie des longues tiges d'acier, de faible diamètre, sur toute leur longueur.

Le fonctionnement de ce four, reproduit ci-dessus, est des plus souples, et permet de réaliser le traitement industriel intégral tant des tiges d'acier à carbone que de celles en alliage d'acier, assurant à chacune d'elles le traitement exact demandé pour leur donner la meilleure combinaison désirable de propriétés physiques. C'est dire que ce four permet une sélection stricte des aciers ou des traitements thermiques les mieux appropriés.

Cette installation comprend troit groupes. Premièrement, le four contrôlé au pyromètre dans lequel les tiges sont chauffées à la température désirée; deuxièmement, une machine qui affectue l'immersion ou trempage de la tige amenée à la température voulue dans un fluide en mouvement porté à la température qui convient; troisièmement, une machine à étirer les tiges et à en vérifier le redressage, qui étire chaque tige au-delà de la limite d'étirage à la température de trempe ou de contraction, autrement dit à l'état plastique et à chaud. Cette dernière opération permet d'être sûr que chaque tige est exempte de défauts et entièrement d'une qualité uniforme.

Toutes les tiges d'aspiration et de traction "Oilwell" sont fabriquées à partir d'aciers choisis à grain fin, et forgés, par contrôle au pyromètre, dans des matrices, ce qui assure un écoulement convenable de la fibre du métal. Les tiges "Oilwell" peuvent se fournir en longeurs allant jusqu'à 30 pieds (9,15 mètres), et avec boites et goujons A. P. I. ou type à goujon avec raccords durcis et meulés au-dessus de la cote. Le standard élevé des tiges "Oilwell" est assuré par une surveillance de tous les instants de la part d'ingénieurs spécialistes.

Les tiges d'aspiration et de traction "Oilwell", soumises à un traitement thermique complet, sont fabriquées régulièrement en modèles de toutes les grandeurs et spécifications A. P. I., afin de faire face aux conditions de pompage les plus diverses. Leurs dénominations sont les suivantes: Qualité "Y", alliage d'acier; Qualité "A", acier au carbone à grain fin contrôlé; et Qualité "S", alliage d'acier au metalloide à faible teneur de ce dernier. Toutes ces tiges sont soumises sur toute leur longueur au traitement thermique décrit plus haut.

Demandez-nous notre Bulletin No. 128 qui donne la description complète des tiges d'aspiration et de traction "Oilwell" à traitement thermique intégral.

OIL WELL SUPPLY COMPANY

Oil City, Pa., U.S.A. **NEW YORK—LONDON** **Dallas, Texas, U.S.A.**

W-K-M FRICTION SLIPS

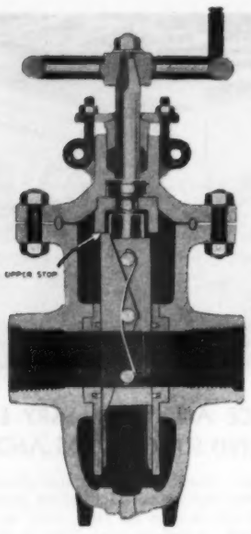
The W-K-M Friction Type Rotary Slips are the latest addition to the W-K-M line of slips, and represent 14 years of slip building. They feature light weight, are highly flexible, and employ no bolts or nuts. Replacement or repair of segments gives the user a new slip, because the cage does not contact pipe or rotary table bushing. Cage design prevents one segment riding higher than others. They eliminate damage to the pipe handled. Steel used in the segments is a one-piece drop forging, heat treated. These slips easily handle the longest pipe strings.

Слипсы W-K-M фрикционного типа для вращательного бурения, являются последним типом, выпущенным этой фирмой в дополнение к другим типам, изготовляемыми ими втечение 14 лет. Их преимущество заключается в легком весе, в гибкости, в отсутствии болтов или гаек. После замены или исправления планшек получается новый слипс, так как клетка его не соприкасается ни с трубами, ни с вкладышами ротора. Конструкция клетки такова, что один сегмент планшек не может подняться выше другого. Применение этих слипсов обеспечивает трубы от порчи. Сегменты планшек прокованы из одного куска стали и термически обработаны. Слипсы W-K-M с легкостью выдерживают наиболее длинные колонны труб.

Los sujetadores rotatorios W-K-M tipo de fricción representan la más reciente adición al surtido de sujetadores W-K-M, constituyendo el resultado de 14 años de experiencia en el ramo. Se caracterizan por peso liviano, flexibilidad y la ausencia de pernos y tuercas. La reparación o reemplazo de los segmentos rehabilita completamente al sujetador, pues la jaula no tiene contacto con el tubo o el buje de la mesa giratoria. La construcción de la jaula evita que un segmento sobresalga de los otros. Estos sujetadores evitan todo daño al tubo manejjado. El acero empleado en los segmentos es de una sola pieza forjada a martinete y tratada al calor. Estos sujetadores corredizos se adaptan muy bien a las cuerdas más largas de tubos.

La válvula de compuerta W-K-M de conducto

Les fixateurs rotatoires W-K-M du type à friction sont la plus récente addition à la collection de fixateurs W-K-M et sont le fruit de 14 années dans la branche. Ils sont caractérisés par leur grande légèreté, leur grande flexibilité, joints au fait qu'il ne demande pas l'emploi d'aucun boulon ou écrou. Le remplacement ou la réparation des segments suffit à procurer à l'exploitant un nouveau fixateur, par suite du fait que la cage n'entre pas en contact avec le coussinet de table tournante, ni avec le tuyau. La construction de la cage est telle qu'elle empêche les segments de chevaucher l'un sur l'autre. Ils évitent toute détérioration au tuyau qu'on manie. L'acier employé pour les segments est de l'acier matricé d'une seule pièce, ayant subi un traitement thermique. Ces fixateurs de tuyau permettent de manier les revêtements de puits les plus longs.



W-K-M GATE VALVE

The W-K-M through conduit lubricated gate valve is the greatest valve advancement in years. The body packed with grease permits easy opening and closing against highest pressures and prevents internal corrosion. Parallel gates expand uniformly, and double-wedge construction makes positive seal-off on both seats in either opened or closed position. The flow-way is entirely unobstructed. Patented bronze combination wipe-and-seal rings contacting the gate keep gate and seats free from deposits, cleaning at each operation of the valve. Bronze seats, extra large, are quickly renewable.

Задвижки W-K-M со сквозными каналами для смазки, являются наибольшим достижением в этой области за последние годы. Корпус задвижек заполнен салом, благодаря чему они легко открываются и закрываются при самых высоких давлениях, а также не покрываются внутри ржавчиной. Параллельные заслонки раздвигаются равномерно, а конструкция с двойным клином создает полную непроницаемость у обоих седел как в закрытом положении, так и в открытом. Проход для жидкости имеет полное открытие. Седла снабжены патентованными очищающими и запирающими бронзовыми кольцами. При каждом закрытии или открытии задвижки, эти кольца, во время контакта их с заслонками, очищают от осадков как заслонки, так и седла. Бронзовые седла экстра-большого размера сменяются легко и быстро.

lubricado representa el mayor progreso en válvulas de su clase de estos últimos años. El cuerpo empacado con grasa permite fácil apertura y cerradura contra las más grandes presiones e impide el enmohecimiento interno. Las compuertas paralelas se extienden uniformemente y la construcción de doble cuña establece un cierre positivo en ambos asientos, tanto en posición abierta como en posición cerrada. El conducto no presenta obstrucción alguna. Los anillos de bronce de combinación de limpieza y cierre patentados, que tienen contacto con la compuerta, conservan la compuerta y sus asientos libres de acumulaciones, limpiándolos cada vez que la válvula funciona. Los asientos grandes de bronce pueden reemplazarse con facilidad.

La soupape à vanne W-K-M à passage lubrifié représente le perfectionnement le plus notable dans la branche depuis bien des années. Le corps en est rempli de graisse, ce mi en permet l'ouverture et la fermeture faciles contre les fortes pressions et empêche la corrosion intérieure. Des vannes parallèles se dilatent uniformément, et une construction à double cale assure une étanchéité positive aux deux sièges, tant dans la position ouverte que dans la position fermée. Le passage d'écoulement est absolument libre. Des segments de bronze brevetés, du type combinaison d'étanchéité et raclage, sont en contact avec la vanne, et maintienne la vanne et les sièges exempts de dépôts, assurant un nettoyage parfait à chaque opération de la soupape.

Sièges en bronze, de grandes dimensions, qui sont facilement remplaçables.

W-K-M COMPANY

HOUSTON, TEXAS, U.S.A.

Export Office: 74 Trinity Place, N. Y. C. *Cable Address:* "WILKOMAC"

AXELSON PRODUCTION EQUIPMENT

For over four decades the Axelson Manufacturing Co. has been furnishing the oil industry with a high quality line of plunger pumps, fittings and sucker rods. Both pumps and rods are produced in varied styles and combinations to meet the widely different conditions found in oil wells throughout the world.

The conventional Axelson pumps are those described as liner pumps, made in two basic types. In addition, Axelson manufactures a complete line of insert type pumps, using the interchangeable liner feature on certain models, as well as the steel ball insert type with cup on others. Excepting cup assembly plunger pumps, all Axelson pumps are designed with the metal to metal principle.

Axelson sucker rods are produced in three different kinds, each serving a different purpose. Write for further details.

Axelson Manufacturing Company изготовляет для нефтяной промышленности высококачественные глубокие насосы плунжерного типа, фитинги и насосные штанги. Как глубокие насосы, так и насосные штанги изготовляются разных типов и комбинаций с тем, чтобы удовлетворить все чрезвычайно разнообразные условия, существующие на нефтяных промыслах, расположенных в разных частях света.

Определением насосов AXELSON являются так называемые насосы со втулками, которые изготовляются фирмой двух основных типов. В дополнение к этому фирма AXELSON изготовляет полный комплект глубоких насосов вставного типа, применяя к некоторым моделям вставные взаимозаменяемые цилиндровые втулки, а к другим моделям стальные шарики вставного типа с манжетами. За исключением насосов с манжетами, все насосы AXELSON сконструированы по принципу работы металла по металлу.

Насосные штанги AXELSON изготовляются трех разных типов, приспособленных для разных условий работы. Обращайтесь к нам за детальными информациями.

Desde hace más de cuatro décadas, la Axelson Manufacturing Co. viene suministrando a la industria del petróleo un surtido de calidad superior de bombas de émbolo, accesorios diversos y varillas de aspiración. Tanto las bombas como las varillas se ofrecen en combinaciones y estilos variados, para satisfacer las condiciones tan diversificadas que se encuentran en los campos petrolíferos del mundo entero.

Las bombas Axelson, de tipo normal, son aquellas que se describen bajo el nombre de bombas de canalización. Se ofrecen en dos tipos de base. Además de ésto, la Axelson fabrica un surtido completo de bombas de tipo de piezas insertadas, entre las cuales hay modelos que emplean el montaje de canalización intercambiable y otras que son del tipo de bolas de acero insertadas en tazas. Con la excepción de las bombas de émbolo con tazas, todas las otras bombas Axelson se construyen sobre el principio de "metal sobre metal".

Las varillas de aspiración Axelson se producen en tres clases diferentes, cada una respondiendo a una aplicación particular. Sírvase pedirnos información detallada.

Depuis plus de quatre décades, la Axelson Manufacturing Co. fournit à l'industrie du pétrole un assortiment de qualité supérieure de pompes à plongeur, divers accessoires et des tiges d'aspiration. Tant les pompes que les tiges sont fabriquées en combinaisons et styles variés, afin de tenir compte des conditions très diversifiées qu'on rencontre dans les champs pétroliers dans le monde entier.

Les pompes Axelson, du type classique, sont celles décrites sous le nom de pompes de canalisation, et sont offertes en deux types de base. En plus de cela, Axelson fabrique un assortiment complet de pompes du type à pièces rapportées, dont certains modèles emploient le montage à canalisation interchangeable, tandis que d'autres sont du type à billes d'acier rapportées avec godet. A l'exception des pompes à godet, toutes les pompes Axelson sont construites selon le principe "métal sur métal."

Les tiges d'aspiration Axelson sont fabriquées en trois genres différents, chacun répondant à une application particulière. Demandez-nous des détails complémentaires.

AXELSON MFG. CO.

Los Angeles, Calif., U.S.A.

P. O. Box 710, Vernon Station

USE THE HIGH POWERED ADSORBENT

In the petroleum oil industry Filtrol is the outstanding decolorizing adsorbent. Here are the reasons:

1. High decolorizing value—Filtrol does the work with one-third the dosage required of fuller's earth.
2. Its oil retention is unusually low.
3. Filtrol gives steady filtration—no need for high filter pressures; filter-aids of fuller's earth admixtures are unnecessary.

Filtrol is a powerful agent in the refining and stabilizing of petroleum oils by contact methods.

В нефтяной индустрии Filtrol является выдающимся обесцвечивающим абсорбентом.

Причины этому следующие:

1. Высокая обесцвечивающая способность, при которой, для производства одной и той-же работы, требуется всего треть Filtrol'a, по сравнению с количеством фильтровальной земли.
2. Поглащаемость нефти Filtrol'ем необычно низка.
3. Filtrol'ем достигается постоянная фильтрация — без необходимости высоких фильтровальных давлений; также нет необходимости вводить добавки, помогающие фильтрации или вводить фильтровальную землю.

Filtrol является сильным агентом для очистки и стабилизации контактным методом.

En la industria del aceite de petróleo, Filtrol es el absorvente descolorante más sobresaliente. Sus ventajas son las siguientes:

1. Gran capacidad descolorante. El Filtrol hace el trabajo con una tercera parte de la cantidad de tierre Fuller requerida para el mismo objeto.
2. Su retención de aceite es extraordinariamente reducida.
3. Filtrol produce una filtración contínua. No hay necesidad de altas presiones. No hay necesidad de substancias suplementarias. Filtrol es un agente poderoso en la refinación y estabilización de aceites de petróleo por métodos de contacto.

Filtrol est, dans l'industrie du pétrole, l'adsorbant décolorant d' emploi le plus fréquent. Voici les raisons qui expliquent sa grande popularité:

1. Son grand pouvoir décolorant—Filtrol produit son effet avec un dosage trois fois plus faible que celui demandé par l'emploi de la terre à foulon.
2. La quantité de pétrole retenue par Filtrol est des plus faibles.
3. Filtrol assure une filtration régulière —il n'est nullemen besoin d'avoir recours à de hautes pressions de filtrage; de même, l'emploi de filtres auxiliaires et l'addition de terre à foulon sont tout à fait inutiles.

Filtrol est un agent puissant dans le raffinement et la stabilisation des pétroles au moyen des procédés de contact.

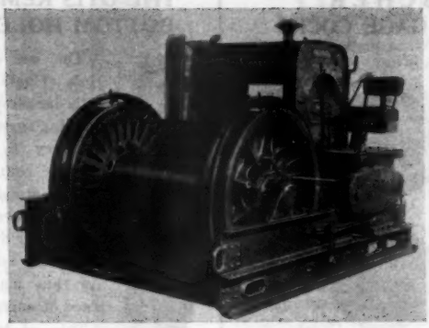
FILTROL COMPANY

of California

1755 Downey Road

Los Angeles, Calif., U.S.A.

Cable Address: "Filtrol Los Angeles"



MUSKOGEE IRON WORKS SKID TYPE OIL FIELD HOIST

Muskogee Iron Works manufacture a complete line of Skid Type, Heavy Duty Oil Field Hoists, especially designed and built for oil field service—pumping rods and tubing, bailing, swabbing and light clean-out work. M.I.W. Hoists have been proven by major operators for many years in the producing fields of the United States and other countries.

M.I.W. Skid Type Hoists are made in the following models:

Model "C" for servicing wells up to 2750′; drum capacity 2550′ of 5/8″ steel cable.

Model "A" for servicing wells up to 5000′; drum capacity 6260′ of 5/8″ steel cable.

Model "E-36" for wells up to 5500′; drum capacity 7750′ of 5/8″ steel cable.

Model "E-48" for wells up to 6800′; drum capacity 15,800′ of 5/8″ steel cable.

Model "D" for the world's deepest wells to date; drum capacity 8500′ of 1″ steel cable.

Muskogee Iron Works manufacture and carry in stock a complete line of A.P.I. Steel Derricks, Rig Fronts and Sub-structures for immediate shipment.

Фирма MUSKOGEE IRON WORKS изготовляет полный набор лебедок, монтированных на салазках и специально сконструированных для тяжелой работы на нефтяных промыслах. Они пригодны для спуска и под'ема насосных штанг и насосных труб, для работы желонкой, свабирования и легких работ по очистке скважин. Лебедки M.I.W. втечение многих лет с успехом применяются крупными операторами на нефтяных промыслах США и других стран.

Лебедки M.I.W., монтированные на салазках, изготовляются следующих моделей:

Модель "C" для обслуживания скважин глубиною до 2750 фут.; канатный барабан пригоден для 2550 фут. стального каната в 5/8″.

Модель "A" для скважин глубиною до 5000 фут.; канатный барабан пригоден для 6260 фут. стального каната в 5/8″.

Модель "E-36" для скважин глубиною до 5500 фут.; канатный барабан пригоден для 7750 фут. стального каната в 5/8″.

Модель "E-48" для скважин глубиною до 6800 фут.; канатный барабан пригоден для 15800 фут. стального каната в 5/8″.

Модель "D" для самых глубоких скважин мира существующих до настоящего времени; канатный барабан пригоден для 8500 фут. стального каната в 1″.

Фирма MUSKOGEE IRON WORKS изготовляет и имеет на складе полный набор стальных вышек, половых и подземных креплений стандарта A. P. I. (Американский Нефтяной Институт), готовых для немедленной отправки.

La Muskogee Iron Works construye un completo surtido de grúas con montaje en patín, para servicio pesado, especiales para trabajos petrolíferos, que se presta a toda operación de instalación de tubería, limpieza, etc. Las grúas M. I. W. han dado espléndidos resultados durante muchos años al servicio de muchos campos petrolíferos en los Estados Unidos y el extranjero.

Las grúas M. I. W. sobre patines o resbaladeras se hacen en los modelos siguientes:

Modelo "C" para servicio de pozos hasta de 2750 pies; capacidad del tambor, 2550 pies de cable de acero de 5/8″.

Modelo "A", para servicio de pozos hasta de 5000 pies; capacidad del tambor, 6260 pies de cable de acero de 5/8″.

Modelo "E-36" para pozos hasta de 5500 pies; capacidad del tambor, 7750 pies de cable de acero de 5/8″.

Modelo "E-48" para pozos hasta de 6800 pies. capacidad del tambor, 15.800 pies de alambre de acero de 5/8″.

Modelo "D" para los pozos más profundos del mundo; capacidad del tambor, 8500 pies de cable de acero de 1″.

La Muskogee Iron Works fabrica y mantiene en existencia un surtido completo de torres de acero, plataformas y subestructuras, para inmediato embarque.

La "Muskogee Iron Works" fabrique un assortiment complet de palans pour champs pétrolifères, du type à patin, pour service intensif. Ces palans sont conçus et construits spécialement pour l'exploitation des champs pétroliers—Ils se prêtent à tous genres de travaux: installation des tubes, écoupage, torchonnage, épuisement léger des puits, etc. Les palans M. I. W. ont prouvé leur supériorité au cours des nombreuses années que les exploitants pétroliers principaux en font usage dans les champs pétrolifères des Etas-Unis et des autres pays producteurs de pétrole.

Les palans à patin M. I. W. sont fabriqués en les modèles suivants: 2750 pieds; capacité de tambour 2550 pieds de câble d'acier de 5/8 de pouce.

Modèle "A" pour le service de puits jusqu'à concurrence de 500 pieds; capacité de tambour 6260 pieds de câble d'acier de 5/8 de pouce.

Modèle "E-36" pour le service de puits jusqu'à concurrence de 5500 pieds; capacité de tambour 7750 pieds de câble d'acier de 5/8 de pouce.

Modèle "E-48" pour le service de puits jusqu'à concurrence de 6800 pieds; capacité de tambour 15.8000 pieds de câble d'acier de 5/8 de pouce.

Modèle "D" pour le service des puits les plus profonds qu'on ait jamais creusés dans le monde jusqu'ici; capacité de tambour 8500 pieds de câble d'acier d'un pouce.

La "Muskogee Iron Works" fabrique et maintient un stock offrant un assortiment complet de grues d'acier A. P. I., plateformes et structures souterraines, pour embarquement immédiat.

Write for Detailed Information

MUSKOGEE IRON WORKS

STEEL DESIGNERS MIW FABRICATORS — ERECTORS

MUSKOGEE OKLAHOMA, U.S.A.

KINZBACH WHIPSTOCK and MILLING TOOL

Patented

The Kinzbach whipstock, the most widely used tool of its kind in the world, is serving operators everywhere for sidetracking junk, for re-drilling workover holes, for plugging back to drill into an upper sand, and for straightening crooked holes or establishing a new drilling course, by orientation if required.

Whipstock is attached to drill stem by bolt and lowered to desired depth, then raised gradually until trigger engages end of pipe joint in the first coupling reached, releasing slip. The slip locks whipstock against turning or downward movement. Position at this point is such that the window will always be between couplings. Enough weight is then applied to drill stem to shear bolt, at the same time setting the slip. The one-way hinge assures that the concave section will always lie against wall of the pipe and offer no obstruction to passage of the tools.

The Kinzbach milling tool, shown here in position for operation, assures a clean, consistent window. The spiral setting of cutting blades eliminates short windows and lessens chances of a twist-off due to too large a cut. The head is a high quality steel and the cutters a high speed tool steel, set into the head so as to insure smoothest possible cutting.

Whipstock (отклоняющий инструмент) фирмы KINZBACH TOOL CO. является наиболее широко применяемым инструментом этого рода. Он употребляется повсеместно для отклонения в сторону скважины посторонних предметов, для бурения заново скважин, для повторного бурения в втрхних песках, для выпрямления кривых скважин, или когда это требуется, для установления нового направлениир при бурении.

Whipstock прикрепляется к бурильной штанге при помощи болта и спускается до желаемой глубины, после чего он постепенно поднимается пока курок его не заскочит за край трубы в первой встречной муфте; этим освобождается планка инструмента. Эта планка закрепляет Whipstock, не давая ему вращаться или опускаться. При этом получается такое положение инструмента, что проходное окно будет всегда расположено между двумя муфтами труб. Вслед за этим, на бурильную штангу производит давление, достаточное для среза болта; это давление в то же время укрепляет планку в трубе. Односторонняя петля обеспечивает то, что выгнутая поверхность направляющей части инструмента всегда ляжет на стенку трубы и будет служить сопровождением для прохода инструмента.

Фрезерный инструмент KINZBACH, изображенный в рабочем положении, обеспечивает получение чистого и основательного проходного отверстия. Спиральное расположение резцов дает длинную проходку и уменьшает возможность срыва резьбы. Головка фрезера изготовлена из высококачественной стали, а резцы из быстрорежущей инструментальной стали. Они расположены в головке так, чтобы работа получалась возможно более плавкая.

La herramienta Kinzbach, llamada "mecha de látigo", el útil de su clase más empleado en todo el mundo, sirve a los explotadores de petróleo, en todas partes, para apartar el desperdicio, reperforar y repasar los agujeros de perforación, repenetrar hasta la mecha de perforación en las arenas superiores y enderezar los agujeros torcidos o bien, establecer una nueva dirección de perforación, por orientación, si es necesario.

Esta herramienta se inmoviliza en el vástago de la herramienta perforadora por medio de un perno y se le hace bajar a la profundidad deseada, luego se le levanta gradualmente hasta que el mecanismo disparador se conecta con el extremo del tubo en el primer acoplamiento que se toque, lo que suelta el collar de contacto. Este collar retiene esta herramienta "mecha de látigo", evitando que gire o descienda. En este punto, la posición que ella ocupa es tal que la mirilla quedará siempre entre los acoplamientos. Se aplica ahora una presión suficiente a fin de que la varilla de perforación corte el perno, lo que al mismo tiempo hace que el collar de contacto entre en su debido sitio. La bisagra unilateral asegura que la parte cóncava repose siempre contra la pared del tubo, sin interponer obstrucción al paso de las herramientas.

La herramienta fresadora Kinzbach, ilustrada aquí, en posición de marcha, asegura una mirilla permanent y limpia. El montaje en espiral de las láminas cortantes suprime las mirillas restringidas y reduce el peligro de torsión a consecuencia de un corte demasiado grande. La cabeza es de acero de superior calidad y las fresas de herramienta de alta velocidad, van embutidas en esta cabeza a fin de asegurar un corte de lo más suve y regular posible.

L'Outil Kinzbach dit "Manche de fouet," l'outil de ce genre le plus employé dans le monde entier, sert partout aux exploitants de champs pétrolifères à brancher le rebut, à reforer et à repasser sur les trous de forage, à repénétrer jusqu'à la mèche de forage dans les sables supérieurs, et à redresser des puits tordus, ou encore à établir une nouvelle direction de forage, por orientation, si on le désire.

Cet outil "manche de fouet" est immobilisé sur la tige de forage au moyen d'un boulon et on le descend à la profondeur désirée, puis on le remonte graduellement jusqu'à ce que le déclic vienne engager l'extrémité du joint de tuyau dans le premier raccord qu'on rencontre, libérant ainsi le collier decontact. Ce collier immobilise le "manche de fouet", l'empêchant de tourner ou de descendre. A ce point, la position qu'il occupe est telle que le regard sera toujours entre les raccords. On applique alors une pression suffisante afin d'amener la tige de forage à cisailler le boulon, ce qui du même coup met le collier de contact en place. La charnière unilatérale assure que la partie concave repose toujours contre la paroi du tuyau et ne vienne pas obstruer le passage des outils.

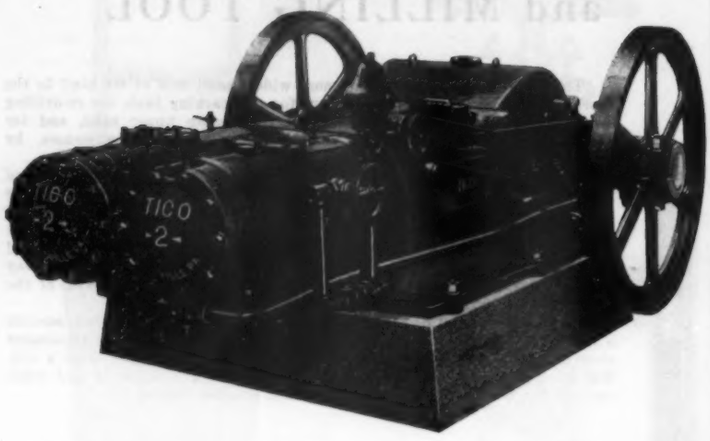
L'outil de fraisage Kinzbach, représenté ici en ordre de marche, assure un regard permanent et propre. Le montage en spirale des lames coupantes supprime les regards restreints et réduit les risques de torsion par suite d'une entaille trop grande. La tête est en acier de qualité supérieure et les fraises, en acier rapide supérieur pour outils, sont encastrées dans cette tête afin d'assurer une taille aussi douce et régulière que possible.

KINZBACH TOOL COMPANY

Manufacturers

HOUSTON, TEXAS, U.S.A.

THE TICO TWO CYCLE TWIN CYLINDER ENCLOSED GAS ENGINE



It is simple, permanent and easy to operate. . . .develops 90 to 150 horsepower and is equipped with a mechanically operated air starter. The cylinder head is made in two parts comprising an inner section, which encloses the combustion chamber, and a removable water jacket, which allows easy cleaning WITHOUT REMOVING THE HEAD—an exclusive Tico feature of great importance to oil well drillers.

The large water jacketed Exhaust Outlet is equipped with a cover that can be quickly removed, allowing the lower part of the cylinder to be readily cleaned.

Maximum combustion efficiency is assured by the unusually large inlet and exhaust parts.

Pistons are provided with 6 packing rings—so arranged that joints can never get in line thus maintaining maximum compression pressure during both compression and pump strokes. The special alloy steel piston rod is adjustable in the crosshead. A dual locking system assures safety.

Smooth and uniform performance is secured by large counter balances firmly secured to crank arms with keys and body fitted bolts.

Двухтактный, двухцилиндровый газовый двигатель TICO закрытого типа, — прост, долговечен и легко обслуживается. Он развивает от 90 до 150 лош. сил и оборудован механически оперируемым воздушным стартером. Цилиндровая головка состоит из двух частей, заключающих в себе внутреннюю камеру, в которой находится камера взрывов и с'емная воздушная рубашка. Этой конструкцией достигается легкость очистки, при которой *не приходится снимать головку цилиндра*. Это является исключительным достоинством двигателей TICO, имеющими большое значение для буровых мастеров.

Большой выхлопный отвод, снабженный воздушной рубашкой, имеет быстро снимающуюся крышку, благодаря чему можно легко очищать нижнюю часть цилиндра.

Максимальный коэфициент полезного действия при взрыве обеспечен тем, что впускные и выпускные каналы имеют необычно большой размер.

Поршни имеют 6 колец, установленных так, что их швы никогда не могут быть по одной линии, чем достигается максимальная величина сжатия, как при компрессионном ходе, так и при насосном. Поршневой шток из специального стального сплава регулируется в крейцкопфе. Двойная запорная система обеспечивает безопасность.

Плавность и равномерность хода достигаются большими маховиками, прочно укрепленными на коленчатом валу при помощи шпонок и хорошо пригнанных болтов.

Sencillo, permanente y fácil de manejar. Desarrolla de 90 a 150 caballos de fuerza y está provisto de un arranque neumático de funcionamiento mecánico. La culata de cilindro consta de dos partes, que comprenden una sección interior, en la que se encubre la cámara de explosión, y una camisa o canalización de agua amovible, que permite fácil limpieza SIN QUITAR LA CULATA, un rasgo exclusivo del Tico, de suma importancia para los perforadores de pozos petrolíferos.

El amplio tubo de salida de escape, provisto de canalización de agua, está provisto de una cubierta, que puede quitarse rápidamente, permitiendo que la parte inferior del cilindro pueda limparse con facilidad.

El rendimiento máximo de la combustión está asegurado por el extraordinario tamaño de las piezas de la admisión y escape.

Los émbolos están provistos de seis empaquetaduras anulares, las cuales están dispuestas de modo que las uniones nunca pueden quedar alineadas. De esta manera, se mantiene presión máxima de compresión durante las carreras de compresión y aspiación. La biela de especial aleación de aceo es ajustable en el cabezal. Un sistema de ciere doble establece completa seguridad.

S obtiene un funcionamiento suave y uniforme mediante grandes contrapesos firmemente asegurados a los brazos del sigüeñal mediante cuñas y pernos.

D'un fonctinnement simple, assurant satisfaction permanente, et d'une manoeuvre facile, ce moteur développe de 90 à 150 chevaux vapeur et est pourvu d'un démarreur à air de fonctinnement mécanique. La tête de cylindre est en deux pièces, consistant d'une section interne qui entoure la chambre de combustion, et d'une chemise d'eau détachable, ce qui permet un nettoyage facile SANS AVOIR A ENLEVER LA TÊTE —c'est là un dispositif exclusif, propre à la marque Tico, qui a une grande importance pour les foreurs de puits pétroliers.

La conduite d'échappement, de grandes dimensions, est pourvue d'une chemise d'eau et équipés d'un couvercle qui peut s'enlever rapidement, permettant ainsi de nettoyer facilement la partie inférieure du cylindre.

Un maximum d'efficacité de combustion est assuré grâce à la conduite d'alimission et au dispositif d'échappement, qui sont tous deux de dimensions exceptionnellement grandes.

Les pistons sont pourvus de 6 bagues de garniture—disposées de telle façon que les joints ne peuvent jamais s'aligner, ce qui maintient ainsi une pression de compression maximum, à la fois pendant la course de compression et la course de la pompe. La tige du piston en alliage d'acier spécial peut se régler dans le croisillon. Un système de verrouillage double assure un maximum de sécurité.

Une performance régulière et uniforme est assurée par des contrepoids de grandes dimensions, solidement fixés à des bras de manivelle avec clavettes et boulons appropriés.

THE TITUSVILLE IRON WORKS COMPANY
TITUSVILLE, PA., U.S.A.

FISCHER BOILER GAGE COCKS

THE FISCHER BOILER GAGE COCK is the only one that uses a large 2⅜" Diameter lead ball to seal off the steam and water.

The ball revolves freely in a solid bronze housing—thus providing thousands of new seats. Seats can overlap and seal tight.

The stob, nozzle or tip is of extra hard Nickel Bronze, and will also last indefinitely.

NOTE, when gage cock is open the steam and water are deflected back against the boiler. The operator cannot get burnt—it is perfectly safe.

Tested up to 1400 pounds pressure.

Nothing to break or give trouble.

Thousands in use all over the world.

Write us on your letter head for free sample.

КРАН FISCHER ДЛЯ МАНОМЕТРОВ ПАРОВЫХ КОТЛОВ является единственным, применяющим для запора пара и воды большой свинцовый шарик диаметром в 2⅜".

Шарик вращается свободно в прочной бронзовой камере, создавая много тысяч разнообразных комбинаций соприкосновения его с седлом. Седла могут перекрываться, давая плотный затвор.

Носок крана сделан из очень твердой никелевой бронзы и служит безконечно.

Заметьте, что когда кран открыт, то струя пара или воды направляется назад в сторону котла. Благодаря этому, рабочий не может обжечься. Кран вполне безопасен.

Он испытывается давлением в 1400 англо-фунтов.

Никакая часть крана не может сломаться или испортиться.

Много тысяч этих кранов применяются по всему свету.

Требуйте письменно на вашем фирменном бланке безплатный образец крана.

EL GRIFO FISCHER DE JAULA DE CALDERA es el único que emplea una bola grande de plomo de 2⅜" de diámetro para cerrar el vapor y agua.

La bola gira libremente en una caja maciza de bronce, lo que representa, en realidad, millares de nuevos asientos. Los asientos pueden superponerse y cerrarse herméticamente.

El vástago, surtidor o punta son de bronce al níquel de gran dureza y por esta razón sirven indefinidamente.

NOTA: Cuando el grifo del manómetro se abre, el vapor y agua se reculan contra la caldera. El empleado no puede quemarse, pues la disposición general es perfectamente segura.

Se ensaya a una presión de 1.400 libras.

No hay nada expuesto a romperse o desarreglarse.

Millares en uso en todas partes del mundo.

Escribanos en su papel timbrado pidiéndonos una muestra gratis.

LE ROBINET JAUGEUR FISCHER POUR CHAUDIERES est le seul robinet de son genre qui utilise une rotule de plomb d'un grand diamètre de 2 pouces ⅜, afin d'assurer l'étanchéité parfaite de la vapeur et de l'eau.

La rotule tourne librement dans une calotte massive en bronze—ce qui fournit des milliers de nouveaux sièges. Les sièges peuvent chevaucher et assurer un joint hermétique.

Le bout, ajutage ou buse est en bronze au nickel d'une grande dureté, ce qui lui assure une durée indéfinie.

NOTEZ que, lorsque le robinet jaugeur est ouvert, la vapeur et l'eau sont détournés vers l'arrière contre la chaudière. L'opérateur est donc à l'abri des brûlures—en toute sécurité.

Eprouvé jusqu'à une pression de 1400 livres.

Ne comporte aucune pièce susceptible de se briser ou de causer des pannes.

Ce robinet s'emploie par milliers dans le monde entier.

Demandez-nous par lettre de vous envoyer un échantillon gratuit.

C. A. FISCHER CO.
507 East Broadway
Fort Worth, Texas, U.S.A.

THE OTIS REMOVABLE BOTTOM HOLE CHOKE

The use of this Bottom Hole Choke to eliminate both dangerously high tubing working pressures and any tendency to freeze at the surface control valves has become standard in most of the high pressure fields in the United States. The higher bottom hole temperatures are thus made to take the place of surface heaters.

This choke is run and pulled under pressure on a Halliburton measuring line without disturbing the well tubing. Changing choke diameters is a matter of only a few hours work for any two good lease men. It is made for all standard tubing diameters larger than one inch.

Descriptive circulars furnished upon request.

Этот глушитель для дна нефтяных скважин уничтожает как опасные высокие давления в насосных трубах, так и какую-либо тенденцию к замерзанию в наружной контрольной задвижке. Благодаря этому его применение стало стандартным на большинстве нефтяных площадей США, где существуют высокие давления. Наиболее высокие температуры, существующие на дне скважины, применяются при этом для замены горелок на поверхности.

Этот глушитель опускается в скважину и навлекается на нее под давлением на измерительном канате Halliburton, причем не приходится тревожить насосные трубы. Для перемены диаметра глушителя требуется всего лишь несколько часов работы двух хороших рабочих. Он изготовляется для стандартных насосных труб всех диаметров, больше одного дюйма.

Циркуляры с описанием глушителя высылаются по запросу.

El empleo de este estrangulador de agujero de fondo, para suprimir tanto las peligrosas grandes presiones en la tubería de trabajo y toda tendencia a congelación en las válvulas superficiales de control, se ha generalizado en la mayor parte de los campos petrolíferos en que la explotación se realiza bajo altas presiones. Las mayores temperaturas de agujero de fondo o inferior se utilizan así para tomar el puesto de calentadores de superficie.

Este estrangulador se corre y levanta bajo presión mediante un cable de medición Halliburton, sin perturbar la tubería del pozo. El cambio del diámetro del estrangulador es trabajo de pocas horas, que puede hacerse por dos hombres. Se hace para toda tubería de diámetros normales mayores de una pulgada.

A solicitud enviaremos circulares descriptivas.

L'emploi de cet étrangleur pour trous de fond, en vue d'éliminer à la fois les pressions dangereusement élevées de travail de tubage et toute tendance de grippage aux soupapes de commande de surface, est devenu standard dans la plupart des champs pétrolifères à fortes pressions des Etats-Unis. Des températures plus élevées de trou de fond sont ainsi réalisées afin de tenir lieu de réchauffeurs de surface.

Cet étrangleur est opéré et tiré, sous pression, au moyen d'un câble mesureur Halliburton, sans qu'on dérange le tubage du puits. Le changement des calibres de l'étrangleur est très facile, ne demandant que quelques heures à deux ouvriers spécialistes d'habileté moyenne. Cet étrangleur se fabrique pour tous les diamètres standard de tubage au-dessus d'un pouce.

Sur demande, on peut obtenir des circulaires descriptives.

THE SOUTHERN STATES CO., Inc.
Tower Petroleum Bldg.,
DALLAS, TEXAS, U.S.A.

BAKER OIL TOOLS ARE DEPENDABLE AND SAFE

Baker Oil Tools are favorably known to experienced operators throughout the world. They are developed to meet modern conditions and each new design or improvement is thoroughly field tested under all conditions before it is offered for sale.

1. Baker Cement Float Shoe: For guiding, floating and cementing casing. Guide and plug are concrete, back pressure valve is made of Bakelite. Provides great strength for the safe landing of casing, yet readily drills up into harmless fragments that circulate away, leaving the hole clear for subsequent operations.

2. Baker Cement Float Collar: A special steel coupling containing a cement and Bakelite float valve. Used one or two joints above the guide shoe. Stops the cementing plug, leaving the cement tailings in the casing so that cement of better consistency is distributed around shoe. Generally used in combination with Baker Cement Float Shoe on long casing strings.

3. Baker Cement Whirler Shoe: Identical in design with the Baker Cement Float Shoe, but with additional side circulation holes which direct the cement upward and around the casing. Insures even distribution of cement. Especially used on long strings of casing to assure cement distribution around the casing.

4. Baker Whirler Cementing Collar: Provides the most efficient means of cementing a combination string or cementing at any depth. Cement plug, Bakelite valve mechanism, and side circulation holes as described above. Placed in the string between screen pipe and casing. Basket acts as outside packer.

5. Baker Cement Guide Casing Shoe: A standard plain casing shoe equipped with a guide of special formula concrete which is very strong, yet is readily drilled up and circulated away—leaving the hole free of any objectionable material.

6. Baker Cable Tool Core Barrel: Has made core drilling with Cable Tools practical and economical. The Inner core-retaining tube rests on bottom of well bore and receives core as the outer drill barrel cuts the formation to full gage.

7. Baker Bakwik Drill Pipe Float: Valve assembly held in place by tool joint pin; removed or replaced without tools. Relieves strain on derrick, rig equipment, lines, brakes. Prevents plugged bits. Made in Standard A.P.I. and Full Hole sizes.

8. Baker Cement Retainer: An inverted cast-iron packer with valve for cementing through tubing under pressure.

9. Baker Rotary Core Barrel: The inner core-retaining tube remains stationary, protecting core from burning, distortion and grinding action. Teeth on Drill Shoe cut a full gage hole. This core barrel drills rapidly.

10. Baker Rotary Hydraulic Expansion Wall Scraper: An underreamer of great expansion. Blades expand by hydraulic action; fold back into body when coming out of hole. Scrapes mud from oil sand; prepares formation for cementing. Provides clearances for liners.

11. Baker Pattern Casing Shoe: Made of high quality steel and used for setting casing in wells drilled with cable tools. The chisel teeth serve to cut off a portion of the wall of the hole so that the casing will follow easily. Highly efficient because of correct taper and careful spacing of cutting teeth.

Инструменты фирмы BAKER OIL TOOLS, Inc., пользуются хорошей репутацией у опытных нефтеработников всего мира. Они сконструированы для новейших условий работ, причем всякая новая конструкция или усовершенствование, до выпуска их на рынок, всесторонне испытываются на нефтяных промыслах при всех существующих условиях работ.

1. *Цементный плавающий башмак* BAKER служит для правильного направления и поддержания колонны обсадных труб в плавающем состоянии и для цементации обсадных труб. Направляющие и пробка сделаны из цемента, а клапан обратного давления — из бакелита. Этот башмак обладает большой крепостью, необходимой для безопасного спуска колонны обсадных труб; вместе с тем, он легко высверливается, превращаясь в мелкие кусочки, которые вымываются из скважины циркуляцией грязевого раствора, причем скважина остается чистой для ведения последующих работ.

2. *Цементный плавающий воротник* BAKER состоит из стальной муфты, в которой находится цементный и бакелитовый плавающий клапан. Этот воротник устанавливается на одну или на две трубы выше направляющего башмака. Им задерживается цементная пробка, причем последняя порция цемента остается в обсадных трубах, благодаря чему цемент лучшего состава распределяется вокруг башмака. Этот воротник обычно применяется в комбинации с цементным плавающим башмаком BAKER.

3. *Крутящий цементный башмак* BAKER идентичен по конструкции с цементным плавающим башмаком BAKER, но имеет дополнительные боковые циркуляционные отверстия, которые направляют струю кверху и вокруг обсадных труб, обеспечивая этим равномерное распределение цемента. Они специально применяются при длинных колоннах труб, чтобы быть уверенным в том, что цемент правильно распределился вокруг обсадных труб.

4. *Крутящий цементировочный воротник* BAKER. Он является наиболее продуктивным для цементации комбинированных колонн или цементации на любой глубине. Цементная пробка и бакелитовый механизм клапана, а также и боковые циркуляционные отверстия такие-же, как описаны выше. Эти воротники помещаются на колонне между перфорированными и обсадными трубами. Цементировочная корзина играет роль наружного пакера.

5. *Цементный направляющий башмак* BAKER. Это обыкновенный башмак обсадных труб, снабженный направляющей заливкой из цемента специального состава, отличающегося большой крепостью; вместе с тем, этот цемент легко высверливается и кусочки его уносятся циркуляционным раствором, причем скважина остается чистой.

6. *Грунтоноска* BAKER *для канатного бурения.* При помощи этой грунтоноски получение колонок грунтов при канатном бурении производится практично и экономно. Внутренняя колонковая труба опирается о дно скважины и в нее поступает грунт, а наружная бурильная труба срезывает формации по полному диаметру скважины.

7. *Поплавок* Baker Bakwik *для бурильных труб.* Комплектный клапан удерживается на месте пальцем соединительного замка; он снимается или заменяется без инструментов. Благодаря ему уменьшается нагрузка на вышку, на бурильные механизмы, канаты и тормаза. Он не дает долоту завязнуть в грунте. Эти поплавки изготовляются по стандарту A.P.I. (Американского Нефтяного Института) для бурильных труб всех размеров.

8. *Удерживатель цемента* BAKER представляет собою опрокинутый пакер с клапаном для цементации под давлением через насосные трубы.

9. *Грунтоноска* BAKER *для вращательного бурения* сконструирована так, что внутренняя труба, куда входит колонка грунта, остается неподвижной, вследствие чего образец грунта никогда не прогорает, не портится и не обдирается. Зубья режущего долота прорезывают отверстие полного диаметра. Эта грунтоноска дает быструю проходку.

10. *Боковой скребок* BAKER *для вращательного бурения с гидравлически выдвигающимися лезвиями,* представляет *собою расширитель с большим расширением.* Его лезвия выдвигаются гидравлическим давлением и складываются обратно в корпус расширителя при подъеме его из скважины. Они соскабливают грязь с поверхности нефтеносных песков и подготовляют грунт для цементации, а также освобождают место для пакеров.

11. *Башмак обсадных труб модели* BAKER. Он изготовляется из стали высокого качества и служит для установки колонны обсадных труб при канатном бурении. Режущие зубья башмака служат для срезывания части грунта со стенок скважины, с тем, чтобы колонна обсадных труб спускалась свободно. Башмак работает чрезвычайно продуктивно благодаря правильному конусу и тщательному распределению режущих зубьев.

Las herramientas petroleras Baker constituyen la preferencia de los explotadores de petróleo de gran experiencia, en todas partes del mundo. Han sido ideadas y construídas para satisfacer perfectamente las exigencias modernas. Todo perfeccionamiento o innovación no es adoptada sino después de haber sido ampliamente demostrada en el campo de la práctica, bajo todas las condiciones imaginables de servicio.

1. *Zapata Baker de Flotador de Cemento*: Para la guía, la descención y la cementación de revestimientos de pozos. La guía y el obturador son de hormigón y la válvula de retención, de baquelita. Esta zapata asegura una gran fuerza para permitir la bajada del revestimiento con toda seguridad, y ofrece la ventaja de reducirlo, sin dificultad, en fragmentos insignificantes durante la perforación, fragmentos que desaparecen por la circulación, dejando así un agujero de perforación sin obstrucción, listo para permitir, sin pérdida de tiempo, las operaciones siguientes.

2. *Collar Baker de Flotador de Cemento*: Un acoplamiento de acero especial, que contiene cemento y una válvula de flotador de baquelita. Emplea una o dos uniones arriba de la zapata guiadora. Cierra el obturador de cementación, dejando los residuos de cemento en el revestimiento de los pozos, de modo que un cemento de mejor consistencia queda distribuido alrededor de la zapata. Se emplea generalmente en combinación con la zapata Baker de flotador de cemento en los revestimientos de gran longitud.

3. *Zapata Giratoria Baker para Cemento*: De construcción idéntica a la zapata Baker de flotador de cemento, pero tiene, además, aberturas laterales suplementarias de circulación, que dirigen el cemento hacia arriba y alrededor del revestimiento de los pozos, asegurando así una distribución satisfactoria de cemento alrededor del revestimiento.

4. *Collar Giratorio Baker para la Cementación*: Representa el medio más eficas para la cementación de combinaciones de perforación y para cementar a toda profundidad. Obturador de cemento, válvula de baquelita y agujeros laterales de circulación, como se describen arriba. Se coloca en el pozo entre la tubería de filtración y el revestimiento. La jaula sirve de empaquetadura exterior.

5. *Zapata Guiadora de Cemento Baker para Revestimiento de Pozos*: Una sencilla zapata normal de revestimiento, provista de una guía de hormigón de fórmula especial de lo más resistente, que se elimina fácilmente durante la perforación, saliendo con la circulación, lo que produce un pozo exento de todo cuerpo extraño que pueda dificultar las operaciones.

6. *Tubo o Cañón Baker para Sacar Muestras con Herramienta de Cable*: Hace muy fácil el sacar muestras con herramienta perforadora de cable. El tubo interior, en que va la muestra, reposa sobre el fondo del agujero de perforación y recibe la muestra en que el tubo de perforación exterior corta la formación al diámetro completo.

7. *Flotador "Bakwik" para Tubos Perforadores*: El grupo valvular se sujeta por el eje de la unión de la herramienta. Se quita y se repone sin ninguna herramienta. Reduce considerablemente el esfuerzo impuesto sobre la grúa, el aparejo de perforación, la tubería y los frenos. Evita el atascamiento de los taladros. Se fabrican en tamaños normales A. P. I. y en tamaños llamados "agujeros completos".

8. *Retenedores Baker para Cemento*: Una empaquetadura invertida de hierro fundido con válvula para cementar, bajo presión, toda la longitud de la tubería.

9. *Tubo o Cañon Baker Rotatorio para Sacar Muestras*: El tubo interior, donde se retiene la muestra, queda fijo, dejando la muestra protegida contra la imflamación, distorsión y pulverización. Los dientes de la zapata de perforación cortan un agujero de tamaño completo. Este tubo rotatoria para sacar muestras gira con mayor rapidez.

10. *Rascador de Pared Baker, tipo Rotatorio, de Expansión Hidráulica*: Un escariador de gran poder de expansión. Las láminas se dilatan por por acción hidráulica y se repliegan contra el cuerpo al salir del agujero. Raspa el lodo de la arena; prepara la formación para su cementación. Provee espacio suficiente para la canalización.

11. *Zapata Modelo Baker para Revestimiento*: De acero de calidad superior. Se emplea para colocar bien el revestimiento en los pozos perforados por medio de herramientas de cable. Los dientes agudos sirven para cortar una parte de la pared del pozo, para que el revestimiento siga sin dificultad. Gran rendimiento, gracias a la conicidad exacta y a la separación precisa de los dientes cortantes.

Les outils pétroliers Baker font la préférence des exploitants pétrolifères expérimentés dans le monde entier. Ils ont été conçus et construits en vue de donner satisfaction aux exigences modernes, et chaque perfectionnement ou dessin nouveau n'est adopté définitivement qu'après avoir été éprouvé sur le chantier même dans toutes les conditions imaginables.

1. *Sabot Baker à Flotteur de Ciment*: Pour le guidage, la descente et la cémentation du revêtement de puits. Le guide et l'obturateur sont en béton, la soupape de retenue en bakélite. Ce sabot assure une grande force pour permettre la descente du revêtement en toute sécurité, et cependant se réduit sans difficulté en fragments quasi-impondérables au cours du forage, fragments qui se trouvent entraînés par la circulation, laissant ainsi un trou de forage non obstrué permettant d'entamer d'autres opérations sans perte de temps.

2. *Collier Baker à Flotteur de Ciment*: Un raccord en acier spécial, contenant un ciment, et une soupape à flotteur en bakélite. Emploie un ou deux joints au-dessus du sobot-guide. Ferme l'obturateur de cémentation, laissant les résidus de ciment dans le revêtement du puits, de sorte qu'un ciment d'une meilleure consistance se trouve distribué autour du sabot. S'emploi généralement en combinaison avec le sabot Baker à flotteur de ciment, sur les revêtements de grande longueur.

3. *Sabot Baker brasseur de ciment*: De construction identique au sabot Baker à flotteur de ciment, mais possède en plus des ouvertures latérales supplémentaires de circulation, qui dirigent le ciment vers le haut et autour du revêtement de puits, assurant ainsi une distribution satisfaisante du ciment autour de ce revêtement.

4. *Collier-Brasseur Baker pour la Cémentation*: Assure le moyen le plus efficace pour la cémentation de combinaisons de forage ou pour cimenter à toute profondeur. Obturateur de ciment, soupape en bakélite, et trous latéraux de circulation, comme ci-dessus. Se place dans le puits entre le tuyau de filtrage et le revêtement. La cage sert de garniture extérieure.

5. *Sabot Baker guide-ciment pour Revêtement de puits*: Un simple sabot standard de revêtement, muni d'un guide de béton de formule spéciale des plus résistants, s'élimine cependant facilement lors du forage par entrainement avec la circulation—ce qui laisse le puits exempt de tout corps étranger de nature à entraver les opérations.

6. *Tube de Carottage Baker pour Outil à Câble*: A rendu très commode et très pratique le forage avec carottage au moyen d'outils à câble. Le tube intérieur, qui retient la carotte, repose sur le fond du trou de forage et reçoit la carotte au moment où le tube de forage extérieur entaille la formation à la cote intégrale.

7. *Flotteur de Tuyau de Forage Baker "Bakwik"*: Groupe de soupape maintenu par l'axe du joint d'outil; s'enlève et se remplace sans aucun outil. Réduit considérablement les efforts imposés à la grue, à l'appareillage de forage, aux tuyaux et freins. Empêche les trépans de se boucher. Fabriqué en grandeur standard A. P. I. et en grandeur dite de "Trou à la cote."

8. *Dispositif Baker de Retenue de Ciment*: Une garniture inversée en fonte, avec soupape pour cimenter sous pression toute la longueur du tubage.

9. *Tube de Carottage Rotatif Baker*: Le tube intérieur, de retenue de carotte, reste fixe, mettant la carotte à l'abri d'inflammation, de distorsion et de rodage. Les dents du sabot de forage taillent un trou à la cote. Ce tube de carottage fore des plus rapidement.

10. *Racleur de Parois Baker, Rotatif, à Expansion Hydraulique*: Un sous-alésoir de grand pouvoir d'expansion. Les lames s'en dilatent par action hydraulique; se replient à l'intérieur du corps de l'instrument à la sortie du trou de forage. Racle la boue des sables pétroliers; prépare la formation à exploiter à la cémentation. Assure la place suffisante aux canalisations.

11. *Sabot-modèle Baker pour Revêtement*: En acier de qualité supérieure et employé pour mettre en place le revêtement dans les puits forés au moyen d'outils à câbles. Les dents cisaillantes servent à entailler une partie de la paroi du puits pour que le revêtement suive sans difficulté. Grande efficacité grâce à la conicité exacte et à l'espacement précis des dents coupantes.

BAKER OIL TOOLS, INC. P. O. Box 609, Huntington Park, California, U.S.A.
COALINGA • TAFT • HOUSTON • OKLAHOMA CITY • TULSA • NEW YORK

TIMKEN ALLOY STEEL REFINERY TUBES

Timken alloy steel refinery tubes are produced by the world's largest manufacturers of alloy steel seamless tubing. They are made in various standard and special analyses for elevated temperature requirements and corrosion resistance in stills, heat exchangers and other types of refinery equipment.

Timken refinery tubes embody over seventeen years of tube-making experience. The Timken metallurgical and manufacturing staffs are well-known for their progressiveness in the technique of tube making. Timken production facilities are extensive and complete, including electric and open hearth furnaces with a capacity of 30,000 tons of alloy steel per month, modern billet bar and tube mills and a quality control system that leaves nothing to chance.

Timken refinery tubes are available in all the usual sizes.

Трубы TIMKEN из стали специального сплава для нефтеперегонных заводов изготовляются самым крупным в мире фабрикантом бесшовных труб из специальной стали. Эти трубы изготовляются из стали разных стандартных и специальных анализов, с тем чтобы противостоять высоким температурам и разъеданию при работе в печах, теплообменных аппаратах и в разных других нефтеперегонных аппаратах,

В изготовление нефтеперегонных труб вложен более чем семнадцатилетний опыт фирм. Металлурги этой фирмы и инженеры по производству труб хорошо известны своей прогрессивностью в смысле техники производства. Фирма имеет большие заводы со всем необходимым оборудованием, включая электрические и мартеновские печи общей производительностью в 30,000 тонн стали специального сплава в месяц, отделение для болванок и трубопрокатное отделение новейших типов. Все находится под строгим контролем, исключающим всякую возможность случайности.

Нефтеперегонные трубы TIMKEN изготовляются всех обычно-употребляемых размеров.

Los tubos Timken de aleación de acero para refinerías son fabricados por los manufactureros más grande del mundo de tubos sin costura de aleación de acero. Se hacen de diversas dimensiones normales, y análisis especiales para las exigencias de temperaturas elevadas, resistencia a la corrosión en los alambiques, cambios de calor y otros detalles de los equipos en las refinerías.

Los tubos Timken para refinèrías contienen la experiencia de más de setenta años en la fabricación de tubos.

El personal de la metalurgia y manufactura Timken es bien conocido por su afán de progresar en la técnica de la manufactura de tubos. Las facilidades Timken para la producción son extensas y completas, incluyendo altos hornos y hornos eléctricos con capacidad para 30.000 toneladas de aleación de acero por mes; laminadoras modernas para pletinas y barras; y un sistema regulador de la calidad que nada deja al azar.

Hay disponibles tubos Timken para refinerías, de todas las dimensiones acostumbradas.

Les tubes en acier spécial Timken pour raffineries sont produits par les plus importants fabricants au monde de tubes sans soudure en acier spécial. Ils sont faits conformément à divers étalons et d'après des analyses spéciales pour les besoins de la résistance aux températures élevées et à la corrosion dans les alambics, les échangeurs de chaleur et autres genres de matérial de raffinerie.

Les tubes Timken pour raffineries représentent plus de dix-sept années d'expérience dans la fabrication des tubes. Les ingénieurs métallurgistes et les techniciens en matière de fabrication de la maison Timken jouissent d'une excellente réputation pour leur technique avancée dans le domaine de la fabrication des tubes. La maison Timken dispose de facilités de production exceptionnelles et complètes qui comprennent des fours électriques et des fours Siemens-Martin d'une capacité de production mensuelle de 30.000 tonnes d'acier spécial, des aciéries modernes pour la production de l'acier spécial en lopins, des usines de tubes et un système de contrôle de la qualité qui ne laisse rien au hasard.

Les tubes Timken pour raffineries se fournissent en toutes les grandeurs courantes.

We would be pleased to send additional information upon request.

THE TIMKEN STEEL AND TUBE COMPANY

CANTON, OHIO, U.S.A.

Williams' "Vulcan Boll-Weevil" Reversible Chain Pipe Tongs

A simplified, reversible action tongs, operates by simply laying on top of pipe and hooking chain around it. "Makes-up" or "breaks-out" without unhooking chain or removing tong from pipe. Other features are reversible jaws and proof-tested chains. Four sizes for pipe ¾ to 12". Fully guaranteed.

Williams' "Vulcan" Chain Pipe Tongs

A world-famous Tongs for over 35 years. Popular in the oil fields because of its great strength and dependability. Made entirely of tough wrought steel equipped with either Flat or Cable chain. Flat chains are proof-tested and certified. Five sizes for pipe ⅛ to 18". Fully guaranteed.

Это упрощенные ключи, действующие в обе стороны. Во время работы их просто кладут поверх трубы и закрепляют цепь, пропуская ее вокруг труб. Как завертывание труб, так и отвертывание производятся без раз'единения цепи и без с'емки ключа с трубы. Другие достоинства ключа заключаются в реверсивных челюстях и надежно испытанных цепях. Они изготовляются четырех размеров для трубы от ¾" до 12". Эти ключи вполне гарантированы.

Ключи, пользующиеся мировой известностью втечение 35-ти лет. Они популярны на нефтяных промыслах ввиду их большой силы и надежности. Они сделаны целиком на кованной стали и снабжены либо плоскими цепями Галля, либо цепями со звеньями. Цепи Галля испытаны и имеют инспекторские сертификаты. Эти ключи изготовляются пяти размеров для труб от ⅛" до 18". Они вполне гарантированы.

Estas tenazas son de acción reversible simplificada. Basta colocarlas en la parte de arriba del tubo y de engancharlas con la cadena, para dar firme agarro. Se aprieta o se suelta sin tener que desenganchar la cadena o separar las tenazas del tubo. Entre otras características interesantes merecen atención sus mandibulas reversibles y las cadenas rigurosamente ensayadas. Se ofrecen en cuatro tamaños para tubería de ¾" a 18". Se garantizan incondicionalmente.

Estas tenazas gozan de reputación universal desde hace más de 35 años. Son muy populares en los campos petroliferos a causa de su gran firmeza y funcionamiento invariablemente seguro y satisfactorio. Se hacen enteramente de firme acero forjado. Se suministran con cadenas planas o cadena de cable. Las cadenas se ensayan con sumo cuidado y se garantizan. Cinco tamaños para tubos de ¼" a 18". Se garantizan incondicionalmente.

Voici des tenailles à action réversible, simplifiée, qu'il suffit de placer *au sommet* du tuyau et d'entourer d'une chaine d'accrochage. "Se met" ou "se défait", sans avoir à décrocher la chaine ou à séparer les tenailles du tuyau. Entre autres caractéristiques intéressantes, citons les machoires réversibles et les chaines rigoureusement éprouvées. Il en est offert quatre grandeurs pour tuyau de ¾ de pouce à 12 pouces. Garanties sans réserve.

Des Tenailles universellement renommées depuis plus de 35 ans. Très populaires dans les champs de pétrole à cause de leur grande robustesse et de leur fonctionnement de tout repos. Fabriquées entièrement d'acier forgé résistant, elles sont équipées avec chaine plate ou avec chaine à câble. Les chaines sont rigoureusement éprouvées et certifiées. Il en est offert cinq grandeurs pour tuyau allant de ⅛ de pouce à 18 pouces. Garanties sans réserve.

J. H. WILLIAMS & CO.

"The Drop-Forging People"

75 Spring Street

New York, U.S.A.

Western Warehouse and Sales Office:

CHICAGO

Works: Buffalo, N. Y.

SHULL PERFORATORS

Two Types of Perforators are manufactured by the Shull Perforating Company—a 3-row perforator which cuts three rows of perforations through casing simultaneously and 1 and 2-string Perforators. Clean hole is perforated singly or in multiple without damage to the casing and without danger of collapsation. Other products manufactured by the Company include a new Shull Swab which allows proper pressure during swabbing and can also be used as a perforation cleaner; the Shull All-purpose Pressure-Type Bailer which bails, washes, cleans and fishes; the Shull Perforation Cleaner which is also a combination bailer and fishing tool; Tubing Slips and Split Spider; Collar Locators; Grabs for recovering lost tools in the well; Bridging Plugs; inside Casing Cutters; and Automatic Line Spooler. See diagram cut in advertisement, page 123.

Фирма SHULL PERFORATING CO. изготовляет два типа перфораторов, а именно: 3-х рядный перфоратор, для одновременной прорезки трех рядов отверстий в обсадных трубах и 1-но и 2-х рядный перфоратор. Эти усовершенствованные инструменты прорезывают отверстия через самые толстые колонны обсадных труб и через цемент в скважине. Одиночное отверстие, или ряд отверстий прорезываются чисто и без повреждения обсадных труб, а также без опасности смятия труб. Работа этими инструментами производится очень просто. К другим предметам, изготовляемым фирмой относятся: новый сваб SHULL, допускающий производить свабирование при правильном давлении, причем он также может применяться для очистки перфорированной части труб; желонка SHULL, типа с давлением, применяемая для разных целей, как-то: для тартания, промывки, очистки и для производства ловильных работ: очиститель SHULL для перфорированной части трубы, который также представляет собою комбинацию желонки и ловильного аппарата; плашки для насосных труб и разрезные спайдера (подкладные хомуты); клещи для ловли на скважины потерянных инструментов: пробки забойные; внутренние труборезки для обсадных труб и автоматические катушки для намотки каната. Все эти продукты подробно описаны в иллюстрированном каталоге, который высылается по запросу.

Dos tipos de perforadores se fabrican por la Shull Perforating Company—un perforador de 3 hileras, que corta tres agujeros simultáneamente a través de los revestimientos del pozo, y un perforador de 1 y 2 hileras. Estas máquinas perfeccionados penetran los revestimientos más gruesos y duros, pasando por el cemento más tenaz empleado en la construcción de pozos. Se obtiene, con perforación sencilla o múltiple, un agujero limpio y regular, sin causar daño al revestimiento y sin peligro de derrumbe. Su funcionamiento es de lo más fácil. Entre otros instrumentos fabricados por esta compañía, vale la pena mencionar el nuevo aparato Shull, que asegura una presión conveniente y que puede utilizarse también como limpiador de perforación; el cubo Shull para todo uso de tipo de presión, que permite efectuar las operaciones de extracción, lavado, limpieza y pesca; el limpiador de perforación Shull, que es también una combinación de cubo y dispositivo de pesca; patines de tubería y caballetes seccionados; reparadores de collares; garras para recobrar útiles caidos en el pozo; tapones de puente; fresas de revestimiento interior; y aparatos automáticos para cables. Todos estos equipos se describen en detalle en nuestro catálogo ilustrado, ejemplar del cual enviaremos a quien se sirva pedirlo.

Deux types de perforateurs sont fabriqués par la Shull Perforating Company—un *perforateur à 3 rangées*, qui coupe simultanément trois rangées de perforations à travers les revêtements de puits, et des *perforateurs à 1 et 2 rangées*. Ces outils perfectionnés pénètrent les plus forts calibres de revêtement et le ciment employé dans la construction des puits. On obtient, en perforage simple ou multiple, un trou de forage net et régulier, sans causer de dommage au revêtement et sans risque d'éboulement. Leur fonctionnement est des plus faciles. Parmi les autres instruments fabriqués par cette compagnie, il convient de citer: un nouvel appareil Shull à tordonner, qui assure la pression convenable au cours du torchonnage et peut aussi s'employer comme nettoyeur de perforation; l'écoupe Shull tous usages du type à pression, qui permet d'effectuer les opérations d'écoupage, lavage, nettoyage et repéchage; le nettoyeur de perforations Shull, qui est aussi une combinaison d'écoupe et d'outil de repéchage; patins de tubage et crisillons sectionnés; Repéreurs de colliers; crochets grappins pour repêcher les outils tombés dans le puits; chevilles de pontage; fraises de revêtement intérieur; et dévideuses automatiques de câble. Tout cet outillage se trouve décrit en détail dans notre catalogue illustré, que nous fournirons sur demande.

Catalog sent upon request.

SHULL PERFORATING COMPANY

2752 Cherry Avenue,

Long Beach, California, U.S.A.

TURBOLITE TURBO-GENERATORS

These units are dependable, rugged electric plants developed especially for drilling rig lighting and similar service. Their design permits easy removal and replacement of major parts, insuring minimum maintenance expense. Capacities: 4 and 5 KW, 115 or 230 volts output.

MECHANICAL DRIVE TURBINES

The improved mechanical drive turbines from 1 to 15 horsepower are adapted for driving vibrating screens, pumps, and other mechanical devices. Smooth speed regulation on either saturated or superheated steam in high or low pressure.

Эти надежные и прочные электрические станции сконструированы специально для освещения вышек при производстве бурильных работ и для аналогичных служб. Их конструкция допускает быструю с'емку и замену основных частей, а также обеспечивает минимальные эксплоатационные расходы. Они строятся мощностями в 4 и 5 киловатт, 115 или 230 вольт.

Усовершенствованные турбины с механическим приводом строятся от 1 до 15 лош. сил и применяются для приведения в действие вибрационных сеток, насосов и др. механизмов. Их ход очень плавно регулируется при работе насыщенным или перегретым паром, как высокого, так и низкого давления.

Estos aparatos son grupos electrogeneradores de excelente construcción y dignos de toda confianza. Han sido ideados y construídos especialmente para suministrar alumbrado a los aparatos de perforación y servicios similares. Su construcción es tal que permite quitar y reemplazar sus piezas importantes sin la menor dificultad, lo que asegura un gasto de conservación mínimo. Capacidades de 4 y 5 Kw. con rendimiento de 115 o 230 voltios.

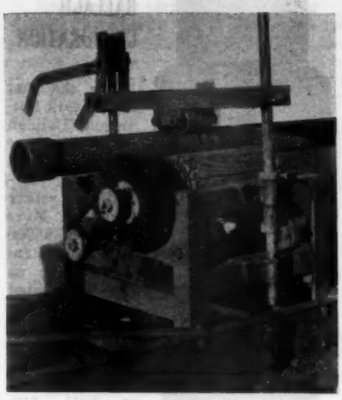
Las turbinas perfeccionadas de propulsión mecánica, con fuerza de 1 a 15 caballos, son particularmente apropiadas al funcionamiento de filtros vibradores, bombas y otras máquinas movidas por fuerza mecánica. Permiten regular una velocidad regular, con vapor saturado o con vapor recalentado, tanto en baja presión como en presiones elevadas.

Ces appareils sont des groupes électrogènes robustes et de tout repos. Ils ont été conçus et construits spécialement pour fournir l'éclairage de l'appareillage de forage, et service similaire. Leur construction est telle qu'elle permet denlever et de remplacer, sans aucune difficulté, les pièces principales du mécanisme, ce qui assure un prix de revient d'entretien minimum. Capacités: 4 et 5 KW, Débit de 115 ou 230 volts.

Les turbines perfectionnées à commande mécanique, d'une puissance allant de 1 à 15 HP, sont particulièrement appropriées pour actionner les filtres vibrateurs, pompes, et autres engins mécaniques. Il permet de contrôler une vitesse régulière, pour vapeur saturée, ou vapeur surchauffée, tant en basse pression qu'en pression élevée.

LACY COMPANY
Mechanical and Electrical Power Apparatus
HOUSTON, TEXAS, U.S.A.

NEW DEAL PIPE CLEANING MACHINE



The New Deal Pipe Cleaning Machine is a sturdily constructed machine for the rapid, efficient cleaning and descaling of the surface of oil country pipe and casing. Will handle pipe from 2" up to 13⅜" OD. Will clean a joint of 9" OD casing in less than three minutes including coupling and under the coupling. (Joint of 4" in 70 seconds.) Also cleans spliced and welded joints.

Sturdy, efficient, compact and portable. Safety self locking automatic Guide Handle. Dual Hi-Speed Guide Rollers, Removable, Reversible Blades; Low first cost, economical operation, low maintenance expense, and minimum shut down time. See our advertisement in this issue.

Новая машина Deal для очистки труб сконструирована очень прочно и служит для быстрой и основательной очистки поверхности нефтепроводных, обсадных и других труб, употребляемых в нефтяной промышленности и для удаления с них окалины. Она пригодна для труб наружным диаметром от 2" до 13⅜"; очищает одну обсадную трубу наружным диаметром в 9", включая ее муфту, а также и под муфтой, менее чем в три минуты. (Трубу в 4" в 70 секунд). Также очищает трубные соединения, сваренные в накладку.

Эта машина прочна, продуктивна, компактна и переносна. Она снабжена безопасной самозапирающейся автоматической направляющей рукояткой, двойными направляющими быстроходными роликами и с'емными реверсивными скребками. Ее первоначальная стоимость невысока; работает она экономно при небольших эксплоатационных расходах и минимальных остановках. Наше об'явление помещено на другой странице этого журнала.

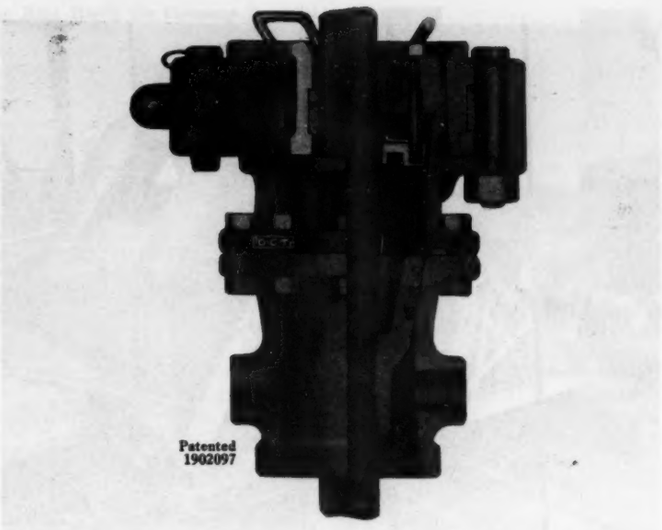
La máquina de limpiar tubería "New Deal" es un equipo de resistente construcción, que asegura la limpieza y la desincrustación, con toda facilidad y eficacia, de la superficie de la tubería y de los revestimientos que se emplean en la explotación de campos petrolíferos. Esta máquina permite manejar tubos de un diámetro exterior de 2 a 13⅜ pulgadas. Limpia, por ejemplo, una junta de 9" diámetro exterior, en menos de tres minutos, incluyendo el acoplamiento y su sección inferior. (Una junta de 4 pulgadas en 70 segundos.) Permite también limpiar las juntas soldadas y las juntas mecánicas.

Esta máquina es firme, eficaz, compacta y portátil. Está provista de una manivela guiadora de seguridad, de cierre automático, rodillos de guia gemelos de gran velocidad y también de láminas desmontables de tipo reversible. Se distingue también por su moderado precio inicial, económico funcionamiento y bajo costo de conservación general. Es muy útil a causa de su continua operación. Sírvase ver nuestro anuncio en el presente número.

La machine à nettoyer les tuyaux "New Deal" est une machine de construction robuste, pour assurer le nettoyage et la désincrustation, à la fois efficaces et rapides, de la surface des tuyaux et des revêtements employés dans l'exploitation des champs pétrolifères. Elle permet de manier les tuyaux d'un diamètre extérieur allant de 2 pouces à 13 pouces ⅜. Elle nettoiera, notamment, un joint de 9 pouces de diamètre extérieur en moins de trois minutes, y compris le raccord et le dessous du raccord. (Joint de 4 pouces en 70 secondes). Elle permet aussi de nettoyer les joints soudés et ceux à épissure.

Cette machine est robuste, efficace, compacte et portative. Elle est pourvue d'une manivelle-guide automatique de sécurité à verrouillage automatique, de rouleaux-guides jumelés de grande vitesse, et aussi de lames démontables, du type réversible. Elle se distingue encore par son bas prix d'achat, son fonctionnement économique, son bas prix de revient d'entretien, et le minimum de temps d'arrêt. Voir notre annonce dans la présente revue.

The New Deal Specialty Company, Inc.
Okmulgee, Oklahoma, U.S.A.



O-C-T TYPE "H" TUBING HEAD—BLOWOUT PREVENTER COMBINATION

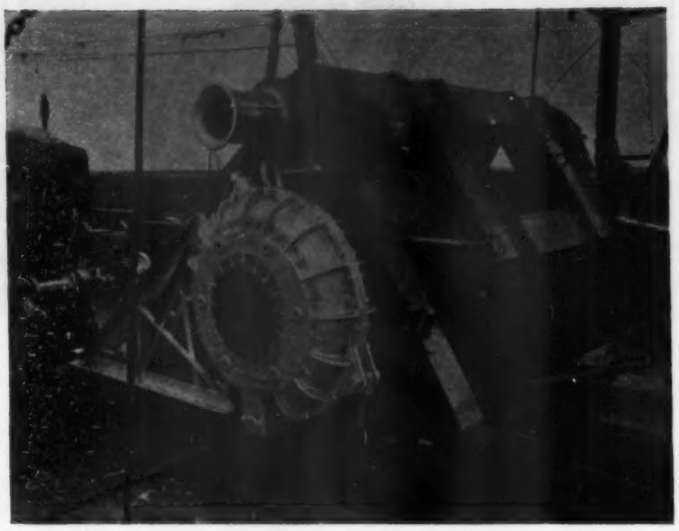
The O-C-T combination shown above is the Type "H" Tubing Head and Type "H" Blowout Preventer, the latter especially designed for the convenience of users of O-C-T Type "H" Tubing Head. The combination permits drilling in, running and landing tubing with ease and complete safety. The design of Type "H" preventer needs no outlets, as circulation returns through the tubing head outlet. This safety combination is sold through leading supply stores, and is completely described in the O-C-T Catalog.

Комбинированная установка O-C-T, изображенная выше, состоит из головки насосных труб типа "H" и предохранителя против выбросов типа "H", причем последний специально сконструирован для удобства клиентов, применяющих головку насосных труб O-C-T типа "H". Эта комбинация дает возможность производить легко и совершенно безопасно как работы по бурению, так и спуск или под'ем насосных труб. Предохранитель против выбросов не имеет отводных каналов, так как циркуляция направляется через отвод, имеющийся в головке насосных труб. Эта безопасная комбинированная установка продается через крупнейших поставщиков нефтяного оборудования. Она детально описана в каталоге фирмы O-C-T.

La combinación O-C-T mostrada arriba es el tipo "H" de cabeza de tubería y el tipo "H" de evitador de explosión, este último proyectado especialmente para la conveniencia de los que usan la cabeza de tubería O-C-T de tipo "H". La presente combinación permite perforar, correr y colocar tubería con toda facilidad y seguridad. La construcción del evitador de explosión de tipo "H" no necesita de salidas, pues la circulación regresa por el conducto de salida de la cabeza de la tubería. Esta combinación de seguridad se vende por los principales establecimientos de abastecimientos, y se describe en detalle en el catálogo O-C-T.

La combinaison O-C-T représentée ci-dessus est la tête de tubage du type "H" et le dispositif de prévention d'explosions du type "H", ce dernier conçu et construit spécialement pour la commodité de ceux qui font emploi de la tête de tubage O-C-T Type "H". Ce dispositif de combinaison permet de perforer, descendre et mettre en place le tubage d'exploitation avec la plus grande facilité et en toute sécurité. Le modèle de construction du dispositif de prévention d'explosions du type "H" ne demande aucune conduite de sortie, étant donné que la circulation revient par le passage de sortie de la tête de tubage. Cette combinaison de sécurité est en vente dans toutes les boutiques importantes de fournitures; la description complète est fournie dans le catalogue O-C-T.

OIL CENTER TOOL COMPANY
HOUSTON, TEXAS, U.S.A.
Cable Address: "OCENTOL"



PARKERSBURG HYDROMATIC BRAKE

The Hydromatic is entirely different from any brake heretofore used in the oil fields. Its resistance is secured by fluid friction resulting from the circulation and agitation of fluid within an enclosed housing. Energy developed by the descending load is imparted to the fluid by a revolving rotor and is dissipated in the form of heat caused by fluid friction. There is no mechanical or dry friction nor are there any wearing surfaces to be replaced as in the case of mechanical brakes. It does not operate under pressure and is entirely safe.

The installation of a Hydromatic will practically eliminate wear on mechanical brake lining and drums. It materially reduces the shocks and jars usually prevalent during braking actions and as a consequence prolongs the life of wire line and other equipment.

The Hydromatic is equally successful on Drawworks, Sand Reels or Bull Wheels.

For complete information send for Booklet G-10-34.

Тормаза "Hydromatic" существенно отличаются от всех других тормазов, применяемых до сего времени на нефтяных промыслах. Их сопротивляемость получается от трения жидкости во время циркуляции и колебания таковой внутри закрытой камеры. Энергия, получаемая при спуске груза, передается жидкости при помощи вращающегося ротора и переходит в нагрев, происходящий от трения жидкости. В этих тормазах нет механического или сухого трения, так же как нет и срабатывающихся поверхностей, которые приходилось бы сменять, как это имеет место при механических тормазах. Тормаза "Hydromatic" не работают под давлением и совершенно безопасны.

При установке тормазов "Hydromatic" исключается износ тормазных колодок и барабанов механических тормазов. Они значительно уменьшают толчки и дергание, обычно происходящие при торможении; в результате этого удлиняется срок службы стальных канатов и прочего оборудования.

Тормаза "Hydromatic" работают с одинаковым успехом на бурильных лебедках, чистильном барабане и инструментальном барабане.

Для полных информаций требуйте наш бюллетень G-10-34.

El freno hidromático es un modelo completamente diferente de todo otro freno empleado hasta ahora en los campos de petróleo. Su resistencia se asegura, gracias a su montaje de rozamiento de flúido, que resulta de la circulación y de la agitación del liquido en el interior de una caja completamente cerrada. La energía desarrollada por la carga descendente se comunica al liquido por un rotor giratorio y se disipa en la forma de calor causado por el rozamiento del liquido. No hay ningún roce o fricción mecánica o seca y tampoco hay superficies expuestas a desgastes y que necesiten reemplazarse periódicamente, como sucede en el caso de los frenos mecánicos. No funciona bajo presión y es completamente seguro.

La instalación del freno hidromático pone fin a casi toda forma de desgaste de forro y de tambor de freno mecánico. Este modelo de freno reduce considerablemente las trepidaciones y choques que ordinariamente se producen en el enfrenamiento y por esta razón, su uso se traduce por una duración mucho más prolongada del cable y otros equipos auxiliares.

El freno hidromático da resultados igualmente satisfactorios en grupos de tracción, en equipos de arena y en ruedas de entrenamiento.

Para información detallada, sirvase pedirnos nuestro folleto G-10-34.

Le frein Hydromatique est d'un modèle entièrement différent de tout autre frein employé jusqu'ici dans les champs de pétrole. Sa résistance est assurée grâce au montage à friction de fluide, qui résulte de la circulation et de l'agitation de fluide à l'intérieur d'un carter complètement enfermé. L'énergie développée par la charge descendante se communique au fluide par un rotor tornant et se dissipe sous la forme de chaleur cause par friction de fluide. Il n'y a aucune friction mécanique ou friction sèche, pas plus qu'il n'y a de surfaces subissant l'usure et devant périodiquement se remplacer, comme c'est le cas pour les freins mécaniques. Il ne fonctionne pas sous pression et est de toute sécurité.

L'installation du frein hydromatique met fin à presque toute forme d'usure, qu'il s'agisse de la garniture de frein ou des tambours de frein. Ce modèle de frein réduit considérablement les trépidations et les ébranlements qui accompagnent habituellement le freinage, et son adoption se traduit, par suite, par une durée d'emploi plus longue du câble et autre appareillage employés.

Le frein Hydromatique donne des résultats aussi satisfaisants, qu'il s'agisse de groupes de traction, de dévidoirs de sable, ou de roues d'entrainement.

Pour vous assurer des renseignements complets, demandez-nous notre Livret G-10-34.

THE PARKERSBURG RIG AND REEL COMPANY

Main Office: Parkersburg, W. Va., U.S.A.
Export Office: 19 Rector St., New York, N. Y., U.S.A.
Cable Address: "PARIGREEL"

PATTERSON-BALLAGH CORPORATION

For the past seven years Patterson-Ballagh Protectors have been preferred in drilling practically all rotary deep wells. More than 600,000 have been manuactured by us and distributed to active drilling fields throughout the world. These Protectors reduce power costs, prevent excessive friction, prevent contact of drilling pipe against casing, minimize hazards of water-leaks, twist-offs and other troubles. These are the extra-long Protectors. Available to fit all sizes of drill pipe.

Send for complete descriptive catalog.

За последние семь лет буровые мастера при бурении почти всех глубоких скважин, предпочитают пользоваться ревиновыми предохранительными кольцами Patterson-Ballagh. Нами изготовлено более 600.000 таких колец, которыми пользуются по всему миру при производстве бурильных работ. Эти предохранительные кольца уменьшают расход энергии, исключают чрезмерное трение, недопускают соприкосновения бурильных груб с обсадными трубами, доводят до минимума утечки воды, случаи срыва резьбы на трубах и другие неполадки. Эти предохранительные кольца изготовляются экстра-большой длины и пригодны для бурильных труб всех размеров.

Требуйте наш каталог с подробным описанием предохранительных колец.

Durante estos últimos siete años, los protectores Patterson-Ballagh han sido los más preferidos para la perforación rotativa de los principales pozos profundos. Más de 600.000 se han construido por nosotros y distribuidos por todos los campos petrolíferos activos del mundo entero. Estos protectores reducen el costo de la fuerza, evitan el rozamiento excesivo, impiden el contacto del tubo perforador con el revestimiento, desminuyen los peligros de escape de agua, torceduras y otras irregularidades por el estilo. Estos protectores son de longitud extraordinaria y se ofrecen en tamaños adecuados a todo tubo perforador.

Pidanos catálogo descriptivo.

Au cours des sept dernières années, les Protecteurs Patterson-Ballagh ont eu la préférence dans le forage de la quasi-totalité des puits profonds rotatoires. Nous en avons fabriqué plus de 600.000 que nous avons distribués aux champs de forage pétrolier en exploitation, dans le monde entier. Ces Protecteurs réalisent une économie de consommation d'énergie, suppriment le frottement excessif, empêchent le tuyau de forage de s'appuyer contre le revêtement du puits, réduisent à un minimum les risques de fuite d'eau, de faussage et autres perturbations du fonctionnement. Ces Protecteurs sont du type extra-long. Il en est offert un assortiment permettant de choisir le modèle proprié à toute grandeur de tuyau de forage.

Demandez-nous notre complet catalogue descriptif.

PATTERSON-BALLAGH CORPORATION

Plant and General Offices:
1900 E. 65th. Street,
Los Angeles, Calif., U.S.A.

Texas and Gulf Coast Distributors—Bettis Sales Co., 516 Merchants & Mfrs. Bldg., Houston
Oklahoma Office—123 N. W. 32nd St., Oklahoma City
New York Office—39 Cortlandt St.

ALWAYS SAFE! FOCUSES TILTS PIVOTS

ECOLITE

UNDERWRITERS' APPROVAL

No. 44 USV

The Efficiency and Safety of the Ecolite electric lantern is best proved by its popularity amongst oil-men. It is said that over 90% of the major oil companies in America have standardized on Ecolite No. 44 USV, and that Ecolite No. 44 USV is the only lantern to be approved by the Fire Underwriters' Laboratories after exhaustive tests in 17 percentages of gasoline vapors. It is spark-proof. Ecolite No. 42 BM is the only electric lantern to be approved by the U. S. Bureau of Mines. No. C300 Ecolite is a general utility and lists for the new low price of $3.00.

Illustrations in the advertisements in another part of this magazine show how these lanterns TILT to be of most effective use. Their apot-beam penetrates into the darkest corners.

If local supply stores do not carry this lantern, write us for further details.

Лучшим доказательством высококачественной службы и безопасности электрических фонарей Ecolite служит их популярность между нефтеработниками. Более 90% крупных фирм Соединенных Штатов употребляют как стандартное оборудование фонарь Ecolite No. 44USV и этот фонарь является единственным утвержденным пожарной лабораторией Underwriters после исчерпывающих испытаний, произведенных в 17-ти процентных газолиновых парах. Он не дает искр. Фонарь Ecolite No. 42BM является единственным электрическим фонарем, утвержденным горным департаментом Соединенных Штатов. Фонарь Ecolite No. C300 служит для общего потребления и его новая пониженная прейскурантная цена составляет 3 долл.

На иллюстрациях в об'явлении, помещенном на другой странице этого журнала, показано, как эти фонари наклоняются, давая этим максимальный эффект. Пучек их лучей проникает в самые темные углы.

Если поставщик вашего района не имеет этих фонарей, то просим вас обращаться к нам за детальными сведениями.

La eficacia y la seguridad de la linterna eléctrica Ecolite se pone de evidencia por la gran popularidad de que goza entre los explotadores de petróleo. Se dice que más del 90% de las grandes compañías petroleras en los Estados Unidos emplea, como norma invariable, la Ecolite No. 44 USV. Esta Ecolite No. 44 USV es la única linterna aprobada por los laboratorios de las compañías de seguro, después de numerosos ensayos en 17 porcentajes de vapores de gasolina. Es a prueba de chispa. La Ecolite No. 42 BM es la única linterna eléctrica aprobaba por el Bureau de Minas de los Estados Unidos. La Ecolite C300 es un modelo de utilidad general y se vende a un precio de lista muy moderado, de sólo $3.00.

Los grabados en otro auncio en este número muestran como estas linternas se INCLINAN para aumentar más aún su efectividad. Su rayo concentrado penetra hasta en los rincones más oscuros.

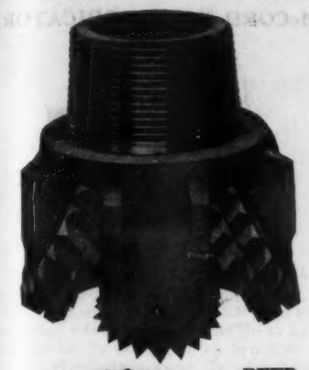
Si los establecimientos locales no tienen en existencia estas linternas, sírvase entonces escribirnos por información detallada.

L'efficacité et la sécurité assurées par la lanterne électrique Ecolite ne sauraient mieux être prouvées que par leur grande popularité parmi les exploitants de champs pétrolifères. On dit aux Etats-Unis que plus de 90% des plus importantes compagnies de pétrole en Amérique ont adopté comme modèle standard la lanterne Ecolite No. 44 USV, et aussi que le modèle Ecolite No. 44 USV est la seule lanterne qui ait été approuvée par les Laboratoires des Assureurs contre l'incendie, après des essais approfondis de 17 pourcentages de vapeurs d'essence. Le modèle Ecolite No. 42 BM est la seule lanterne électrique qui ait été approuvée par le Bureau des Mines U. S. Le modèle Ecolite No. C300 est une lanterne d'utilité générale et est cotée au prix de nouveau abaissé de $3.00.

Les illustrations données dans d'autres annonces de la présente revue montrent comment on peut employer ces lanternes TILT avec un maximum d'efficacité. Leur faisceau lumineux convergeant pénètre les coins les plus sombres.

Si vos magasins d'approvisionnement locaux n'ont pas cette lanterne, écrivez-nous directement pour obtenir des détails.

ECONOMY ELECTRIC LANTERN COMPANY
CHICAGO, ILLINOIS, U.S.A.



REED ROLLER BEARING ROCK BITS

Благодаря отбалансированности достигается прямолинейное бурение.

Эти долотья требуют меньших нагрузок и бурят быстрее, так как конструкция поперечных роликов такова, что при подаче долота, они не работают по окружности, а все время отводятся в сторону, *скручивая* и *разрывая* грунты в процессе *проникновения.*

Правильно циркулирующий грязевой раствор быстро удаляет частицы срезываемых грунтов, давая возможность зубьям фрезов работать все время в новых грунтах и не дает долоту завязнуть в вязких формациях.

СОЕДИНИТЕЛЬНЫЕ ЗАМКИ REED С ЦИРКУЛЯЦИОННЫМ КАНАЛОМ ПОЛНОГО РАЗМЕРА.

По стандарту принятому А.Р.І. (Американский Нефтяной Институт).

1. *Увеличивается скорость бурения,* так как частицы срезываемого грунта удаляются быстрее при большей струе подаваемого грязевого раствора.
2. *Уменьшаются эксплоатационные расходы грязевого насоса,* так как отсутствует обратное давление, вызываемое сопротивлением с'уженных проходов обыкновенных соединительных замков.

BARRENAS REED EN COJINETE DE RODILLO PARA YACIMIENTOS ROCOSOS

Equilibradas para asegurar un agujero de perforación rectilíneo.

Perforan más rápidamente con menos peso, gracias a la construcción transversal de los rodillos. Esta disposición hace que las fresas de perforación doblen y desgarren la formación a medida que van penetrando, lo que por su parte hace que las fresas se desvien continuamente de la linea recta.

Una circulación positiva del lodo quita rápidamente los trozos desprendidos de la formación explotada, lo que permite a los dientes de la fresa atacar constantemente las nuevas formaciones y evita que la barrena se atasque en las formaciones pegajosas.

UNIONES REED FULL HOLE PARA PERFORACION DE AGUJEROS EXACTOS

Adoptadas como normales por el A.P.I.

1. *Aumentan las velocidades de la perforación,* asegurando la remoción más rápida de los trozos desprendidos de la formación explotada, lo mismo que un flujo más expedito del lodo.
2. *Reducen los gastos de conservación de las bombas de lodo,* por la eliminación de contra-

TREPANS REED A PALIERS A ROULEAUX POUR GISEMENTS ROCALLEUX

Equilibrés pour assurer un trou de forage rectiligne

Forent plus vite avec un poids léger, grâce à la construction transversale des rouleaux; cette disposition amène les fraises de forage à *tordre* et à *déchirer* la formation au fur et à mesure qu'elles *pénètrent* plus avant; ceci résulte du fait que les fraises sont continuellement forcées de s'écarter de la ligne droite.

Une circulation positive des boues entraine rapidement les morceaux détachés de la formation exploitée, ce qui permet aux dents de la fraise d'attaquer constamment de nouvelles formations, et empêche le trépan de se coincer dans les formations collantes.

JOINTS D'OUTILS REED POUR FORAGE DE TROUS A LA COTE

Standard A.P.I. adopté

1. *Augmentent les vitesses de forage,* en assurant l'entrainement plus rapide des morceaux détachés de la formation exploitée, ainsi qu'un écoulement accru de boues.
2. *Réduisent les frais d'entretien des pompes à*

REED ROLLER BEARING ROCK BITS

Balanced for straight hole drilling

Drill faster with light weight because of cross roller design which makes the cutters, as they are constantly forced to change their direction from a straight line, **twist** and **tear** the formation as they **penetrate.**

Positive slush circulation rapidly removes formation cuttings permitting cutter teeth to continually attack new formation, and prevent balling up of the bit in sticky formations.

REED FULL HOLE TOOL JOINTS

Adopted A.P.I. Standard

1. **Increases drilling speeds** through the more rapid removal of formation cuttings with an increased mud flow.
2. **Lowered mud pump upkeep costs** through elimination of back pressures caused from tool joint restrictions.
3. **Decreases drilling hazards** with a freer mud circulation, assisting in keeping drill stem from getting stuck, particularly at the greater depths.
4. **Fits both regular internal upset A.P.I.** drill pipe and external upset drill pipe.
5. **Strength assured.** Outside diameter of the pin proportionately increased with the increasing of the bore.

REED REAMERS

The characteristic progressiveness of

3. *Уменьшаются неполадки во время бурения,* так как циркуляционная струя проходит свободнее, не давая бурильной штанге завязнуть в грунтах, что особенно важно при больших глубинах бурения.
4. Они одинаково пригодны для бурильных труб стандарта А.Р.І. с внутренней или наружной высадкой.
5. *Крепость замков обеспечена* ввиду большего диаметра пальца в соответствии с большим диаметром внутренней резьбы замка.

РИМЕРЫ REED.

Характерная прогрессивность фирмы REED ROLLER BIT COMPANY в умении предвидеть запросы на более глубокое, более быстрое и более научно-поставленное бурение нигде не выражается так явно, как в их понимании важности получения прямолинейных скважин. В этом направлении фирма REED является пионером, так как она первая соединила фрезерные долотья Reed, имеющие поперечные фрезы, с римерами Reed, имеющими боковые фрезы. Эта комбинация сделана для получения круглых, прямых скважин полного диаметра.

Достоинства: корпус римеров откован из стали специального сплава за

presiones resultantes de las restricciones de las uniones de las herramientas.
3. *Desminuyen los riesgos de la perforación,* asegurando una circulación más libre del lodo y contribuyendo a impedir que el vástago de la perforadora se atasque, sobre todo en las grandes profundidades.
4. Se adaptan tanto a tubo de perforación interna A.P.I. de tipo corriente reforzado y rocado, como a tubo de perforación externa igualmente reforzado y roscado.
5. *Aseguran la resistencia.* El diámetro exterior del pasador se aumenta proporcionalmente en relación con el aumento del diámetro interior.

ESCARIADORES REED

La Reed Roller Bit Company ha dado evidencia de previsión, marchando a la vanguardia del progreso, al satisfacer las exigencias de la perforación más cientifica, más rápida y al mismo tiempo, más profunda, y sobre todo, al reconocer toda la importancia de la perforación de pozos rigurosamente rectilíneos. Para este fin, la Reed ha ideado y fabricado escariadores para equipar sus barrenas de perforación rápida de rodillo transversal, para satisfacer la demanda de perforación de agujero rectilíneo, perfectamente circular y de misensiones exactas.

boues, par l'élimination des contre-pressions, résultant de calibrages des joints d'outils.
3. *Diminuent les risques du forage,* en assurant une circulation plus libre des boues et en contribuant à empêcher la tige de forage de se coincer, en particulier aux grandes profondeurs.
4. S'adaptent tant au tube de forage interne A.P.I. du type courant renforcé filetage, que du tube de forage externe également renforcé au filetage.
5. *Assurent la résistance.*—Le diamètre extérieur de la goupille est augmenté proportionnellement à l'accroissement de l'alésage.

ASESEURS REED

La Reed Roller Bit Company a fait preuve de prévision, marchant vraiment avec le progrès, en prévoyant les exigences du forage plus scientifique, plus rapide, en même temps que plus profond, et surtout, en reconnaissant toute l'importance du forage de puits rigoureusement rectilignes. Dans ce but, Reed a concu et mis au point les aléseurs Reed pour en équiper les trépans Reed de forage rapide à rouleau transversal, et cela en vue de forer un trou rectiligne, parfaitement rond, et strictement à la cote.

Caractéristiques: Corps en alliage d'acier forgé, avec raccords intégralement forgés. Espacement

the Reed Roller Bit Company in anticipating the requirements of deeper, faster, and more scientific drilling is nowhere made more manifest than in the recognition of the importance of straight hole drilling. To that end Reed pioneered in equipping Reed Fast Cutting Cross Roller Bits with Reed Reamers for the purpose of maintaining a round, full-gauge, straight hole.

Features: Forged alloy steel body with connections forged integral. Ample slip, elevators and tong space. Large clearance to wall of hole. Simple, dependable Reamer Cutter Assembly; easily changed. Replaceable hardened pin bearing blocks are embedded in Reamer Body and welded in place; a simplified, sturdy construction.

REED HARD AND SOFT FORMATION CORE DRILLS—MODEL B

Simplified Unit Construction: In the interest of simplicity and efficiency, all non-essential parts have been eliminated. Inner barrel and core catchers are carried in the cutter head **permitting the taking of the core close to the bottom of the hole.**

CUTS LARGER DIAMETER CORES with the consequent higher percentage of recovery of larger and longer cores.

EASY AND QUICK TO REMOVE CORES: Simply unscrew the cutter head and the inner barrel slips from the cutter head, making core immediately available.

одно целое с соединительными частями. Достаточные поверхности для захвата плашками, элеватором и ключами. Большое расстояние корпуса от стенок скважины. Простая и надежная установка фрезов; легкая сменяемость. Заменяемые корпуса подшипников с закаленными пальцами утоплены в корпусе римера и приварены на месте; упрощенная и прочная конструкция.

ГРУНТОНОСКИ REED ДЛЯ ТВЕРДЫХ И МЯГКИХ ГРУНТОВ — МОДЕЛЬ В.

Упрощенная конструкция: все несущественные части исключены из грунтоноски, что сделано с целью упрощения ее конструкции и придания ей большей продуктивности. Внутренняя труба и задерживатель грунта укреплены в режущей головке, благодаря чему можно отбирать колонку грунта близко ко дну скважины.

СРЕЗЫВАЕТ КОЛОНКУ ГРУНТА БОЛЬШЕГО ДИАМЕТРА, благодаря чему получается большой процент больших и более длинных колонок.

КОЛОНКИ ЛЕГКО И БЫСТРО ИЗВЛЕКАЮТСЯ: для этого надо только отвернуть режущую головку и внутренняя труба выскальзывает из нее и немедленно освобождает колонку грунта.

Características: Cuerpo de aleación de acero forjado con conexiones integralmente forjadas. Amplio espacio para sujectadores, elevadores y tenazas. Amplitud en relación con la pared del pozo. Montaje sencillo y seguro de las fresas en el escariador; reemplazo fácil. Los bloques del cojinete del pasador están endurecidos y son intercambiables, quedando embutidos en el cuerpo del escariador y soldados en esta posición; una construcción firme y simplificada.

BARRENAS REED PARA SACAR MUESTRAS DE FORMACIONES DURAS O BLANDAS—MODELO B

Construcción simplificada de los elementos: Para asegurar un máximo de sencillez y eficacia, todas las piezas no esenciales han sido suprimidas. El tubo interior y los recogedores de muestras van en la cabeza fresadora, lo que permite *tomar una muestra cerca del fondo del agujero perforado.*

CORTA MUESTRAS DE MAYOR DIAMETRO, lo que permite obtener un mayor porcentaje de muestras más grandes y más largas.

LAS MUESTRAS SE SACAN CON MAYOR FACILIDAD Y RAPIDEZ. Sencillamente destornillando la cabeza fresadora, y el tubo cortador de muestra sale por esta cabeza, entrengando así inmediatamente la muestra obtenida.

amplement suffisant pour pinces, ascenseurs et coulisseaux. Dégagement très suffisant par rapport à la paroi du puits. Montage simple et de tout repos des fraises d'aléseur; remplacement facile. Blocs de palier à goupilles, durcis et interchangeables, qui sont encastrés dans le corps de l'aléseur et soudés dans cette position; une construction robuste et simplifiée.

MECHES DE CAROTTAGE REED POUR FORMATIONS DURES ET MOLLES—MODELE B

Construction simplifiée des éléments: Afin d'assurer un maximum de simplicité et d'efficacité, toutes les pièces non essentielles ont été supprimées. Le tube carotteur intérieur et les attrapecarottes sont portés par la tête de fraissage, *ce qui permet de prélever une carotte tout près du fond du trou de forage.*

DECOUPE DES CAROTTES D'UN PLUS GRAND DIAMETRE ce qui permet de prélever un meilleur pourcentage de carottes plus fortes et plus longues.

ENLEVEMENT FACILE ET RAPIDE DES CAROTTES: Il suffit de dévisser la tête de fraisage, et le tube carotteur intérieur glisse aussitôt dehors de la tête de fraisage, libérant ainsi immédiatement la carotte.

← Left **REED REAMERS**

REED HARD AND SOFT FORMATION CORE DRILLS Model B

REED FULL HOLE TOOL JOINTS Adopted A.P.I. Standard

REED ROLLER BIT COMPANY, Houston, Texas, U. S. A.

BREWSTER High-Pressure CASING HEAD

You can depend on this Casing Head. Many large companies in foreign fields prefer it for that reason. Made of forged steel. It has a split gland. It can be repacked under pressure. Tested to 5,000 pounds. Made also in what American drillers call the Standard Louisiana Pattern Stuffing Box Casing Head with split gland, in three weights, one tested to 1,000 pounds, one tested to 2,000 pounds and one tested to 3,000 pounds. Either type Casing Head threaded either inside or outside for either casing or collar. Low prices. Ask for quotations.

Головка BREWSTER для обсадных труб чрезвычайно надежна. Благодаря этому многие крупные заграничные нефтепромышленные компании предпочитают эту головку. Она сделана из кованой стали и имеет нажимной фланец разрезной конструкции. Набивку можно менять под давлением. Головка испытана на давление в 5000 англо-фунтов. Он также изготовляется, так называемого в Америке, стандартного типа Luisianna с разрезным нажимным фланцем. Этот тип изготовляется трех видов (по тяжести), а именно: для пробного давления в 1000 англо-фунтов, для пробного давления в 2000 англо-фунтов и для пробного давления в 3000 англо-фунтов. Все типы головок имеют либо внутреннюю, либо наружную резьбу или для обсадных труб, или для муфт. Цены головок низки. Просим обращаться к нам с запросами.

Esta cabeza de revestimiento de pozos es digna de absoluta confianza. A ésto se debe el hecho de que numerosas compañías explotadoras de yacimientos petrolíferos en el extranjero le den particular preferencia. Se hace de acero forjado. Tiene una glándula hendida. Su empaquetadura puede colocarse de nuevo bajo presión. Ensayada a 5000 libras. Se ofrece también en el tipo que los perforadores en los Estados Unidos llaman cabeza de revestimiento con prensaestopa, modelo normal Louisiana, con glándula seccionada, en tres tamaños, el uno ensayado a 1000 libras, el otro a 2000 libras y el tercero, a 3000 libras. Todos los modelos de cabeza de revestimiento llevan rosca afuera o adentro, para revestimiento o collar, y se venden a precios muy ventajosos. Pídanos información detallada y precios.

Cette Tête de Revêtement de puits est absolument de tout repos. C'est pourquoi un grand nombre de compagnies exploitant des champs pétrolifères à l'étranger lui donnent la prérérence. Fabriquée en acier forgé. Elle possède une buselure sectionné. On peut y remettre de la garniture sous pression. Eprouvée à 5.000 livres. Fabriquée aussi dans le type que les foreurs américains apppellent la tête de revêtement à presse-étoupe modèle standard Louisiana avec buselure sectionné, offerte en trois calibres, l'un éprouvé à 1000 livres, un autre éprouvé à 2000 livres et le troisième éprouvé à 3000 livres. L'une ou l'autre de ces têtes de revêtement est fileté, soit à l'intérieur, soit à l'extérieur, pour revêtement ou collier. Offertes à des prix des plus avantageux. Demandez-nous les cotations.

BREWSTER Wire-Line CORE BARREL

This BREWSTER Core Barrel goes into the well on a wire line—you do not pull the drill stem out of the hole. Takes a core in from 40 to 60 minutes at any depth. You save from 3 to 6 hours on every core. It's so easy and quick that you are never tempted to pass up likely formations. Results guaranteed. Ask for quotation.

Грунтоноска BREWSTER спускается в скважину на канате, причем бурильная штанга не извлекается из скважины. Колонка грунта с любой глубины получается втечение 40-60 минут. При получении каждой колонки грунта, буровой мастер экономит от 3-х до 6-ти часов. Она работает так легко и быстро, что при бурении никогда нет стремления пройти через грунт без обследования такового. Результаты работы гарантированы. Просим обращаться к нам с запросами.

Este tubo de perforación de muestras BREWSTER se introduce en el pozo colgante de un cable de alambre. No hay necesidad de quitar el vástago del taladro del pozo. Este tubo perfora una muestra en un espacio de 40 a 60 minutos, a cualquiera profundidad. Se ahorran de 3 a 6 horas en cada operación de perforar muestra. La muestra se obtiene con tanta facilidad y rapidez que nunca se deja pasar la oportunidad de explorar un yacimiento de posible valor. Asegura resultados positivos. Pídanos información detallada y precios.

Ce Tube de carottage BREWSTER est introduit dans le puits monté sur un fil—il n'y a pas besoin de tirer la tige de forage du puits. Ce tube prélève une carotte à toute profondeur, en un espace de temps variant de 40 à 60 minutes. Vous épargnez ainsi de 3 à 6 heures sur chaque opération de carottage. Le prélèvement d'une carotte se fait si facilement et si rapidement que l'on n'est jamais tenté de sauter un gisement qu'on aimerait prospecter. Les résultats qu'il assure en sont garantis. Demandez-vous nos cotations.

THE BREWSTER COMPANY, Inc.

SHREVEPORT, LOUISIANA, U.S.A.

MASON-NEILAN REGULATING AND CONTROL EQUIPMENT

Mason-Neilan Compensated Instruments are standardized.

Mason-Neilan regulating and control equipment is providing exact pressure, temperature and flow control in gasoline plants and refineries all over the world. These regulators and instruments were developed **in and for** the Oil Industry . . . have many exclusive features which insure accurate control of all petroleum processes. Features include frictionless, stainless steel ball bearings, flexible multiple springs, strong and simple construction, easily adjusted or repaired by average operator and numerous other advancements. Write for complete catalog.

Регулирующее и контрольное оборудование MASON-NEILAN применяется на газолиновых и нефтеперегонных заводах всего мира для поддержания точных давлений, и контроля температуры и количества протекающих жидкостей. Эти регуляторы и инструменты разработаны в нефтяной индустрии и для таковой; они имеют много выдающихся достоинств, обеспечивающих точность контроля всех процессов на нефтеперегонных и газолиновых заводах. Инструменты снабжены анти-фрикционными шариковыми подшипниками из нержавеющей стали, гибкими многослойными пружинами; конструкция их проста и прочна и они легко регулируются и исправляются обыкновенным рабочим; кроме вышеперечисленных есть еще много других достоинств. Требуйте наш полный каталог.

Los instrumentos de control y de regulación Mason-Neilan permiten a las refinerías de petróleo y a las plantas de gasolina o esencia, en todo el mundo, el regular exactamente las presiones, las temperaturas y el flujo o corriente, en las diversas operaciones de fabricación. Estos instrumentos de control han sido estudiado especialmente en la industria petrolera para su aplicación a la misma. Poseen un gran número de características exclusivas, que aseguran un control riguroso de todas las operaciones petroleras. Las características esenciales de estos instrumentos son las siguientes: cojinetes de bolas de acero inoxidable y sin rozamiento, resortes múltiples flexibles, construcción sencilla y resistente, ajuste y reparación muy fáciles de efectuar por un mecánico de mediana habilidad, y muchas otras ventajas. Pídanos ejemplar de nuestro catálogo general.

Les instruments de contrôle et de réglage Mason-Neilan permettent aux raffineries de pétrole et aux usines à essence, dans le monde entier, de contrôler exactement les pressions, les températures et l'écoulement, dans les diverses opération de fabrication. Ces instruments de contrôle ont été étudiés spécialement *dans et pour* l'industrie pétrolière . . . et possèdent un grand nombre de caractéristiques exclusives qui assurent un contrôle rigoureux de toutes les opérations pétrolières. Les caractéristiques essentielles de ces instruments sont les suivantes: roulements à billes d'acier, inoxidables et sans friction, ajustage et réparation faciles à effectuer par le mécanicien d'habilité moyenne, et bien d'autres avantages. Demandez-nous notre catalogue complet.

MASON-NEILAN REGULATOR COMPANY

1193 Adams Street
BOSTON, MASS., U.S.A.

McCORD "LD" LUBRICATORS

Standard Lubricator of the Oil Field

An important and exclusive feature of McCord "LD" lubricators is that every drop of oil passing through the sight feed is delivered to the point of lubrication, showing at all times that the lubricator is functioning properly. Adjustment for amount of oil delivered is easily made without use of tools and once made is not affected by changes in temperature. The same quantity of oil is delivered, regardless of temperature, whether it be a light body or a heavy body cylinder oil. Any pump unit is readily removable without stopping the lubricator or disturbing other pump units. All parts are brass or steel, drop forging accurately machined and interchangeable. Every McCord lubricator is tested against 2,000 lbs. pressure. Sizes from one quart to four gallon capacity. Catalog and prices on request.

Важное и исключительное преимущество лубрикаторов McCORD "LD" заключается в том, что каждая капля масла, подаваемая к месту смазки, проходит мимо смотрового глазка, благодаря чему можно в любой момент убедиться в том, что лубрикатор работает правильно. Регулировка количества подаваемого масла производится быстро и без каких-либо инструментов, причем после отрегулировки на нее не действуют перемены температуры. Лубрикатор, независимо от температуры, подает то же количество масла, будь это легкое или тяжелое цилиндровое масло. Любой из насосов может быть убран без остановки лубрикатора и без какого-либо осложнения для других насосов. Все части лубрикатора взаимозаменяемы и сделаны из меди или стали; они отколваны и тщательно обработаны. Каждый лубрикатор McCORD испытывается давлением в 2000 англо-фунтов. Он изготовляется размером от кварты до четырех галлонов. Каталоги и цены высылаются по запросу.

Una importante y exclusiva característica de los lubricadores McCord "LD" reside en el hecho de que cada gota aceite que pasa por el dispositivo de alimentación provisto de mirilla, se deposita en el mismo punto de lubricación, lo que permite contar, en todo momento, con la seguridad de que el lubricador está funcionando bien. La regulación de la calidad del aceite suministrado al mecanismo se hace fácilmente sin exigir el empleo de aditamientos, y una vez hecha esta regulación, no es alterada por los cambios de temperatura. La misma cantidad de aceite se suministra siempre, sea cual fuera la temperatura, y ya se trade de un aceite flúido o de un aceite espeso, para cilindros. Se puede desmontar fácilmente el completo grupo de la bomba, sin tener que paralizar el lubricador y sin desarreglar los otros grupos de bombas. Todas las piezas son de latón o de acero, con las forjadas a martinete muy bien labradas a máquina. Además, las piezas son intercambiables. Todos los lubricadores McCord se prueben bajo una presión de 2000 libras. Se ofrecen en modelos con capacidades que varían de un cuarto de galón a cuatro galones. Sírvase pedir catálogo general y precios.

Une importante et exclusive caractéristique des lubrificateurs McCord "LD" réside dans le fait que chaque gouette h'huile qui passe à travers le dispositif d'alimentation à viseur, est déposée au point même de lubrification, permettant de s'assurer à tout moment que le lubrificateur fonctionne bien. Le réglage de la quantité d'huile fournie au mécanisme se fait facilement sans exiger l'emploi d'aucun outil, et une fois ce réglage fait, il n'est nullement affecté par les changements de température. La même quantité d'huile est fournie, quelle que soit la température, qu'il s'agisse d'une huile fluide ou, au contraire, d'une huile lourde, pour cylindres. On peut facilement démonter tout groupe de pompe, sans devoir arrêter le lubrificateur et sans déranger les autres groupes-pompes. Toutes lespièces en sont en laiton ou en acier, emboutiesetusinées avec la plus grande précision; en outre, elles sont interchangeables. Tous les lubrificateurs McCord sont éprouvées sous une pression de 2.000 livres. Il en est offert des modèles de capacité variant de un quart à quatre gallons. On peut obtenir catalogue et prix sur demande.

McCORD RADIATOR & MFG. CO.

Lubrication Division
DETROIT
MICHIGAN, U.S.A.

"CATERPILLAR" LINE

Serving in practically every branch of the oil and pipe line industry, Caterpillar Tractor Co. offers a complete line of Tractors, Graders, Maintenance Machines and Power Units.

The "Caterpillar" Diesel Forty Tractor, shown above, is the smallest of the three sizes of Diesel-powered "Caterpillar" Tractors, developing 44, 56 and 83 horsepower at the drawbar, respectively. Five sizes of gasoline powered tractors are also available. For road construction there are four sizes of Blade Graders and two models of power controlled Elevating Graders. The Auto Patrols, one Diesel powered and two gasoline powered, available with either single or tandem drive, along with a Motor Patrol and several smaller maintainers, make up the maintenance line. And for portable and stationary uses, there are five sizes of "Caterpillar" Diesel Engines and two gasoline engines, developing from 130 to 47 brake horsepower, available as Power Units or Industrial Engines.

Для обслуживания любой отрасли нефтяной и нефтепроводной индустрии, CATERPILLAR TRACTOR CO. предлагает комплектный набор тракторов, грейдеров, машин для поддержания дорог в порядке и силовых установок.

Трактор "Caterpillar" с дизелем в 40 лош. сил, изображенный выше, является самым маленьким по сравнению с тремя следующими размерами дизельных тракторов "Caterpillar", развивающих на тяговом крюке 44,56 и 83 лош. сил. Имеется также пять размеров тракторов, снабженных газолиновыми двигателями. Для постройки дорог фирма изготовляет четыре размера грейдеров с лопастью и два размера силовых элеваторных грейдеров. Автомобильные патрульные установки, один тип с дизель-мотором и два типа с газолиновыми моторами, изготовляются с одиночным или двойным приводом. Вместе с моторным патрулем и несколькими более мелкими машинами, они составляют комплект, поддерживающий дороги в порядке. В качестве передвижных и стационарных установок служат дизельные двигатели "Caterpillar" пяти размеров и газолиновые двигатели двух размеров, развивающие от 130 до 47 тормазных лош. сил. Они изготовляются для силовых установок, или в виде индустриальных двигателей.

Sirviendo a casi todas las ramificaciones de la industria del petróleo y sistemas de canalizaciones petrolíferas, la Caterpillar Tractor Co. ofrece un surtido completo de tractores, niveladoras, máquinas de conservación y otros grupos motores.

El tractor "Caterpillar" Diesel Cuarenta, que ilustramos arriba, es el más pequeño de los tres tractores "Caterpillar" provistos de motor Diesel, que desarrollan respectivamente 44, 56 y 83 caballos de fuerza a barra de tracción. Se ofrecen también cinco tamaños de tractores accionados por motor de gasolina Para la construcción de caminos cuatro tamaños de niveladoras de lámina y dos modelos de niveladora de levantamiento de fuerza controlada. Las patrullas automóviles, de las cuales una se acciona por motor Diesel y dos modelos por motor de gasolina, se pueden obtener con propulsión sencilla o en tandem. Además, hay también una patrulla motriz y varias máquinas pequeñas de conservación, que constuyen el surtido completo de conservación general. Y para usos portátiles o fijos, esta compañía ofrece cinco tamaños de motores "Caterpillar" de tipo Diesel y dos motores de gasolina, que desarrollan de 130 a 47 caballos de fuerza al freno, que pueden obtenerse como grupos motores o como motores industriales.

Faisant des fournitures à la quasi-totalité des branches de l'industrie du pétrole et des canalisations pétrolières, la Caterpillar Tractor Co. offre un assortiment complet de tracteurs, de régaleuses, de machines d'entretien et de groupes moteurs.

Le tracteur à chenilles Diesel Quarante, représenté ci-dessus, est le plus petit des trois grandeurs de tracteurs "Caterpillar" actionnés par moteur Diesel, développant respectivement 44, 56 et 83 HP à la barre de traction. Il est également offert cinq grandeurs de tracteurs actionnés par moteur à essence. Pour la construction des routes, il est offert quatre grandeurs de régaleuses à lames, et deux modèles de régaleuses de relevage de puissance contrôlée. Les patrouilles automobiles, dont une actionnée par moteur Diesel et deux modèles actionnés par moteur à essence, peuvent s'obtenir avec commande simple ou en tandem; en outre, on peut obtenir une patrouille motrice et plusieurs petites machines d'entretien, qui constituent l'assortiment d'entretien. Enfin, pour emplois portatifs et fixes, cette compagnie offre cinq grandeurs de moteurs Diesel "Caterpillar" et deux moteurs à essence, développant de 130 à 47 HP au frein, fournis soit comme gropes-moteurs, soit comme moteurs industriels.

CATERPILLAR TRACTOR CO.
PEORIA, ILLINOIS, U.S.A.

HALLIBURTON EQUIPMENT

HALLIBURTON OIL WELL CEMENTING EQUIPMENT—Trucks, pumps and mixers, developed after experience gained in cementing more than 75,000 oil wells. This equipment is qualified in every detail to serve under the most severe oil-field conditions, is not sold in the United States but is available for export sale.

MULTIPLE STAGE CEMENTING EQUIPMENT—Permits, in one continuous operation, the placing of two or more batches of cement at predetermined levels behind the casing.

FULL-HOLE CEMENTING EQUIPMENT—A modern method of cementing combination strings. "Full Hole" means a full-size hole in the productive formation. Gives the operator (1) the same drainage surface in the sand but with considerably less investment in the well; or (2) up to 60 per cent greater drainage surface and 30 per cent greater screen area than in reduced hole practice. Used with HOWCO CEMENT WASH PIPE LINING in conjunction with Combination Strings, it provides a mechanical means of establishing circulation through entire length of combination string.

HOWCO MEASURING DEVICE—For measuring depth of wells and running crooked hole surveys or instruments for bottom-hole pressures.

HOWCO TESTER—A simple method of testing the productivity of formations.

HOWCO FLOATING EQUIPMENT—Was designed to provide ample floating strength and efficient guiding for even the longest strings of casing and to provide a new note of cementing clearance, offering minimum resistance to establishing circulation and to flow of cement. It also drills out readily.

ОБОРУДОВАНИЕ HALLIBURTON ДЛЯ ЦЕМЕНТАЦИИ СКВАЖИН. — Это оборудование состоит из грузовиков, насосов, мешалок и пр. механизмов, разработанных на основании опыта, полученного при цементации более 75.000 нефтяных скважин. Каждая деталь установки отличается высоким качеством, необходимым для работы в чрезвычайно тяжелых условиях, существующих на нефтяных промыслах. Установки фирмы HALLIBURTON не продаются в США, однако фирма продает их для экспорта.

МНОГОСТУПЕНЧАТОЕ ЦЕМЕНТИРОВОЧНОЕ ОБОРУДОВАНИЕ. — Этой установкой можно произвести одной непрерывной операцией две или более затрубных цементных заливок на заранее выбранных глубинах.

ОБОРУДОВАНИЕ ДЛЯ ЦЕМЕНТАЦИИ ПОЛНОЙ ПОПЕРЕЧНОЙ ПЛОЩАДИ СКВАЖИНЫ. — Новейший метод для цементации комбинированных колони труб. "Полная площадь" означает скважину полного диаметра в продуктивных пластах. Этот метод дает возможность оператору: (1) получить ту-же дренажную площадь песков, но с меньшими затратами; или (2) получить до 60 процентов большую площадь дренажа и до 30 процентов большую перфорированную площадь, чем это достигается при методах, дающих уменьшение поперечного сечения скважины. Применяя при этом методе **ВТУЛКИ HOWCO ДЛЯ ПРОМЫВКИ ЦЕМЕНТА**, получается возможность поддерживать циркуляцию по всей длине комбинированной колонны труб.

ИЗМЕРИТЕЛЬНАЯ УСТАНОВКА HOWCO служит для измерения глубин и для определения искривлений скважин. Она имеет инструменты для определения давлений на дне скважины.

ОБОРУДОВАНИЕ HOWCO ДЛЯ ИССЛЕДОВАНИЯ ГРУНТОВ дает упрощенный метод для испытания продуктивности формаций.

ПЛАВАЮЩЕЕ ПРИСПОСОБЛЕНИЕ HOWCO. Оно сконструировано так прочно, что дает возможность поддерживать в плавающем состоянии и правильно направлять даже самые длинные колонны обсадных труб. Получается максимальная сопротивляемость циркуляции и потоку цемента, который не может проникнуть в колонну обсадных труб. Это приспособление можно быстро и легко высверлить.

EQUIPO HALLIBURTON PARA LA CEMENTACION DE POZOS—Camiones, bombas y hormigoneras, desarrollados después de mucha experiencia en la cementación de más de 75.000 pozos petrolíferos. Este equipo está acondicionado, desde todo punto de vista, para servir bajo las condiciones más severas que se presenten en los yacimientos. No se vende en los Estados Unidos, pero se ofrece a venta en el extranjero.

EQUIPO DE CEMENTACION DE MULTIPLE ETEPA—Permite, en una operación contínua, la colocación de dos o más cargas de hormigón a niveles predeterminados detrás del revestimiento o cubierta.

EQUIPO DE CEMENTACION DE AGUJERO COMPLETO—Un método de cementación moderna. "Agujero completo" significa un agujero de tamaño completo en la formación productiva. Da al explotador (1) la misma superficie de drenaje en la arenilla, pero con una inversión mucho menor en el pozo, o (2) hasta 60% más superficie de drenaje y 30% se superficie de filtración que por los métodos de agujero reducido. Empleado con el REVESTIMIENTO DE CEMENTO DE TUBO DE LAVADO HOWCO, en conjunción con sistema de combinación, provee un medio mecánico de establecer circulación por la longitud completa del sistema combinado.

APARATO DE MEDICION HOWCO—Para medir la profundidad de los pozos y hacer estudios de desviación o guiar instrumentos para determinar las presiones del fondo de los agujeros.

ENSAYADOR HOWCO—Un método sencillo para ensayar la productividad de la formación.

EQUIPO DE FLOTACION HOWCO—Ha sido proyectado para proveer amplia fuerza de flotación y eficaz guía a las más largas hileras de revestimientos o cubiertas y para asegurar un notable espacio de cementación, que ofrezca una resistencia mínima a la circulación establecida y al flujo del cemento. Se perfora con facilidad.

EQUIPEMENT HALLIBURTON POUR LA CEMENTATION DES PUITS PETROLIFERES—Camions, pompes et mélangeurs, étudiés et construits à la lumière d'une expérience acquise dans la cémentation de plus de 75.000 puits pétrolifères. Cet équipement est qualifié, à tous égards, pour fonctionner dans les conditions d'emploi des plus dures sur les champs pétroliers. Il ne se vend pas aux Etats-Unis, mais se fournit à l'exportation.

EQUIPEMENT DE CEMENTATION A ETAGE MULTIPLE—Permet, en une seule opération continue, de placer deux charges de ciment, ou plus, à des niveaux déterminés à l'avance derrière le revêtement du puits.

EQUIPEMENT DE CEMENTATION DE TROU COMPLET—Une méthode moderne pour la cémentation en combinaison. "Trou Complet" veut dire un trou complet dans la formation d'exploitation. Donne à l'exploitant (1) la même surface de drainage dans le sable, mais exige une immobilisation de capital beaucoup moins élevée dans le puits; ou (2) jusqu'à une surface de drainage 60% plus grande et une surface de filtration 30% plus grande que dans l'exploitation réduite par trous isolés. S'employe avec le REVETEMENT DE CIMENT DE TUYAU DE LAVAGE HOWCO, en combinaison avec les Rangés d'exploitation combinés; il procure un moyen mécanique permettant d'établir la circulation sur l'étendue entière du système de combinaison.

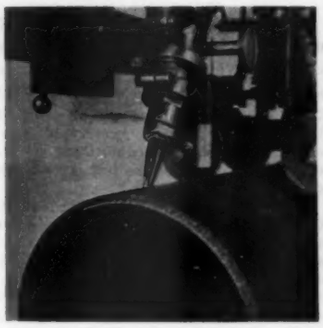
INSTRUMENTS DE MESURE HOWCO—Servent à mesurer la profondeur des puits et à étudier les déviations des puits—Aussi instruments pour mesurer les pressions au fond des puits.

HOWCO—Fournit une méthode simple pour déterminer la productivité des diverses formations géologiques.

EQUIPEMENT DE FLOTTAISON HOWCO—A été conçu et construit en vue d'assurer une ample force de flottaison et de fournir un guide efficace même aux plus longs modèles de revêtements de puits, ainsi que pour assurer un espace suffisant pour la cémentation, offrant ainsi un minimum de résistance à l'établissement de la circulation et à l'écoulement du ciment. Il permet aussi de forer avec facilité.

Descriptive literature on Halliburton Equipment will be furnished on request.

HALLIBURTON OIL WELL CEMENTING CO.
DUNCAN, OKLAHOMA, U.S.A.



AIRCO PORTABLE PIPE CUTTING AND BEVELING MACHINE

The above machine, Type No. 1, provides a quick and effective means of cutting and beveling pipe in the field. It does both in one operation and is unquestionably the fastest and most economical method of preparing pipe for welding.

It is built with machine tool precision plus the ruggedness to withstand hard usage in the field . . . Easily handled and operated by one man . . . Weighs only 50 lbs. . . . Quickly set up and adjusted for a straight cut or for any desired bevel . . . Applying the speedy oxyacetylene (flame-cutting) process, it does a clean-cutting job, leaving pipe ends square with pipe axis, free from burrs, slag and scale and ready for welding without further attention.

When equipped with two torches, it cuts out faulty welds or old screwed couplings in quick time, simultaneously beveling the pipe for re-welding. Write for the folder which tells the story with many pictures and few words.

Машина типа № 1, изображенная выше, применяется для быстрой и успешной перерезки труб во время прокладки трубопроводов, а также для срезки фасок на этих трубах. Она производит обе эти работы в одну операцию и бесспорно является наиболее быстрым и экономным приспособлением для подготовки труб к сварке.

Эта машина построена с большой точностью и вместе с тем является достаточно прочной для тяжелых условий работы на полях. Работа на ней производится легко одним человеком. Вся машина весит всего 50 англо-фунтов. Она легко устанавливается и отрегулировывается с тем, чтобы разрез получился прямой, а фаска имела требуемый уклон. Благодаря быстродействующему ацетиленовому пламени достигается чистый разрез трубы, причем площадь разреза получается перпендикулярной к оси трубы, а фаски не имеют плен, окалин или шлаков и вполне готовы для сварки без какой-либо дополнительной подготовки.

Машина, снабженная двумя форсунками, перерезывает очень быстро неправильно сваренные трубы или старые навернутые муфты, одновременно срезывая фаски. Требуйте наш иллюстрированный каталог с описанием этой машины.

La máquina que se ve arriba, Tipo No. 1, suministra medios rápidos y efectivos de cortar y biselar tubos en el campo. *Ejecuta ambas cosas en una sola operación* e incuestionablemente es el método más rápido y más económico de preparar los tubos para ser soldados.

Está construída con la precisión de las máquinas herramientas, más la resistencia robusta al uso rudo del campo. . . . Un solo hombre la maneja y hace funcionar fácilmente. . . . Sólo pesa 50 libras. . . . Se dispone y ajusta rápidamente para cortes rectos o para hacer el bisel que se desee. Aplicando el procedimiento rápido de cortar con soplete oxiacetilénico, hace cortes limpios, dejando las extremidades de los tubos a escuadra con el eje de los mismos, libres de rebabas, escorias o escamaciones y *listas para ser soldadas sin ninguna otra atención.*

Cuando está provista de dos sopletes, corta en poco tiempo las soldaduras defectuosas o las uniones atornilladas, biselando simultáneamente los tubos para soldarlos de nuevo. Escriba pidiendo el folleto que con muchas láminas y pocas palabras refiere la historia.

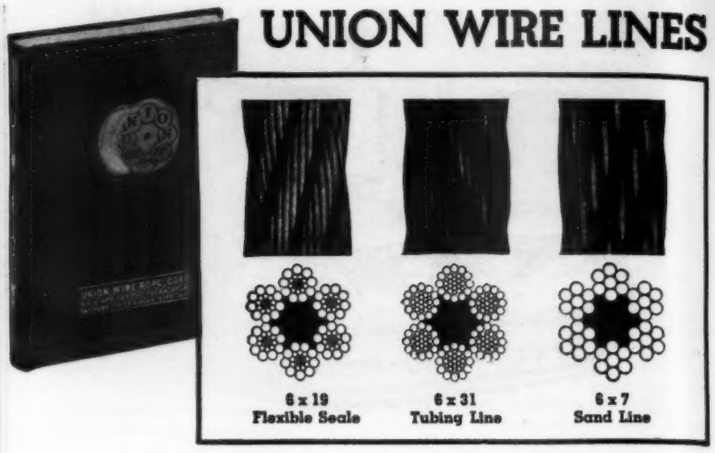
La machine représentée, Type No. 1, permet d'effectuer sur le terrain un coupage et un biseautage rapides et efficaces du tuyau. *Une seule opération réalise ces deux résultats* et cette machine offre incontestablement le moyen le plus rapide et le plus économique de préparer le tuyau à la soudure.

Sa construction est d'une grande précision et d'une solidité permettant à la machine de résister aux durs travaux sur le terrain. . . . D'un maniement et d'une conduite faciles par un seul ouvrier. . . . Ne pèse que 50 lbs. . . . D'un montage et d'un ajustage faciles pour effectuer un coupage vertical ou tout biseautage désiré. . . . Employant le procédé rapide oxy-acétylénique, elle réalise un coupage d'une grande nettté, de sorte que les extrémités du tuyau sont à l'équerre, exemptes de bavures, de scories et d'écailles, *et prêtes à la soudure sans autre.* Quand elle est munie de deux chalumeaux, elle détruit rapidement les soudures defectueuses ou les accouplements vissés usagés, et en même temps biseaute le tuyau pour la resoudure. Demandez-nous de vous envoyer le dépliant explicatif qui contient beaucoup de gravures et peu de mots.

Illustrated folder gladly sent upon request.

AIR REDUCTION SALES CO.

60 East 42nd Street,
NEW YORK, N. Y., U.S.A.
Cable Address: Reductair.



UNION WIRE LINES

The difference between Union Wire Lines and others is that Union Lines are made especially to meet oil industry needs, under the direction of engineers who have spent years in studying the actual conditions and problems relating to the use of wire lines in the oil fields.

Union Wire Lines, being the product of this specialized research, are unequalled for oil field use. The materials will stand up and give longer service, there will be fewer fishing jobs—and lower production costs will result.

Our engineers, through years of experience, have recognized the need of the industry for a thorough and complete wire rope handbook, as the proper use and care of wire lines will tremendously increase their efficiency and prolong their life.

In answer to this need we have prepared the handbook shown above. It is not in any sense the usual wire rope catalog, but on the contrary is devoted, throughout its 232 pages, to a complete collection of practical and technical information covering the proper handling, usage and care of oil industry wire lines. Such subjects as splicing, attaching sockets, etc., are thoroughly explained and illustrated. Many valuable tabulations of engineering data are included.

This book represents a unique value for every user of oil industry wire lines. It is free to oil men throughout the world. Write today for your copy.

Проволочные канаты Union отличаются от других канатов тем, что они изготовляются специально для нужд нефтяной индустрии и под наблюдением инженеров, которые потратили годы для изучения тех действительных условий и задач, которые связаны с применением проволочных канатов на нефтяных промыслах.

Проволочные канаты Union, которые изготовляются на основании вышеуказанных тщательных обследований, являются несравнимыми с другими для работ на нефтяных промыслах. Они сделаны из выносливого материала, дают продолжительную службу, вследствие чего уменьшаются ловильные работы и оперативные расходы.

В результате долголетнего опыта наши инженеры убедились в том, что промышленность нуждается в основательном и полном справочнике по стальным канатам, так как правильное обращение с канатами и уход за ними готовляются специально для нужд нефтяной индустрии и под наблюдением инженеров, которые потратили годы для изучения тех действительных условий и задач, которые связаны с применением проволочных канатов на нефтяных промыслах.

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Идя на встречу этой потребности, мы составили вышеуказанный справочник. Он ни в коем случае не является обыкновенным каталогом канатов, а наоборот, все его 232 страницы представляют собою полный сборник практических и технических информаций по правильному обращению, применению и уходу за проволочными канатами для нефтяной индустрии. В нем подробно разъяснены и иллюстрированы такие вопросы, как сращивание канатов, укрепление в них проушин и проч. В справочнике имеется также много ценных таблиц с техническими данными.

Эта книга представляет собою исключительную ценность для всякого потребителя проволочных канатов для нефтепромышленности. Она посылается бесплатно всем нефтеработникам по всему миру. Требуйте немедленно экземпляр этого каталога.

La diferencia entre los cables de alambre, Union Wire Lines, y los otros es, que las Union Lines están hechas especialmente para las necesidades de la industria del petróleo, bajo la dirección de ingenieros que han trabajado muchos años en el estudio de las condiciones actuales y de los problemas que presenta el uso de la líneas de alambre en los campos de petróleo.

Las líneas Unión de alambre son el producto de esas investigaciones especiales y no tienen igual para usarse en los campos de petróleo. Los materiales son resistentes y dan servicio por largo tiempo, con ellas habrá trabajo de "pezca" en los pozos—resultando costos más bajos de producción.

Nuestros ingenieros con muchos años de experiencia han reconocido la necesidad que tiene la industria de un manual completo sobre cables de alambre, pues es uso y manejo propio de los cables aumentar enormemente su eficaci. y prolonga su duración. Para responder a esa necesidad hemos preparado el manual que se ve arriba. De ninguna manera es un catálogo común de cables de alambre, al contrario, sus 232 páginas están enteramente destinadas a la colección completa de informes prácticos y técnicos concernientes al uso y manejo proprio de los cables de alambre en la industria del petróleo. Asuntos tales como, ampalmes, enchufes, etc., esán completamente explicados e ilustrados. Incluye además muchos datos de ingeniería y tablas muy valiosas.

Este libro representa un tesoro para todos los que usan cables de alambre en la industria del petróleo. Es gratis para los petroleros de todo el mundo. Escriba hoy pidiendo un ejemplar.

La différence entre les câbles métalliques "Union Wire Lines" et les autres réside dans le fait que les "Union Lines" sont fabriqués spécialement en vue de satisfaire les besoins de l'industrie pétrolifère, sous la direction d'ingénieurs qui ont consacré années à l'étude des conditions et des problèmes vitaux relatifs à l'emploi des câbles métalliques dans les champs pétrolifères.

Les câbles métalliques Union étant le résultat de ces recherches spécialisées, n'ont pas leur gal pour l'emploi au chantier pétrolifère. Les matériaux employés résisteront plus longtemps et feront plus d'usage; on aura moins de repêchages à effectuer et on abaissera sensiblement le prix de revient de la production.

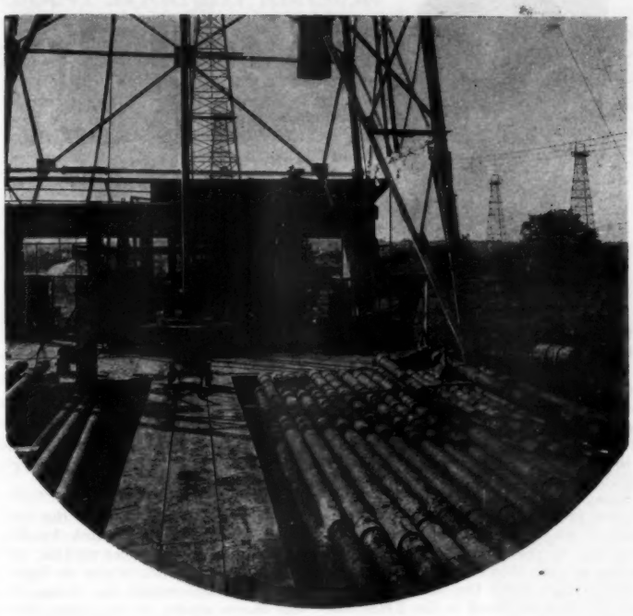
Nos ingénieurs ont reconnu, au cours de leud expérience de nombreuses années, le besoin ressenti par l'industrie pour un livret d'instructions complet sur l'emploi des câbles, étant donné que l'application et l'entretien convenables des câbles métalliques en augmentent considérablement l'efficacité et en prolongent la vie.

Pour satisfaire ce besoin, nous avons préparé le livret représenté ci-dessus. Il n'a aucun point de comparaison avec le catalogue de câbles, tout au contraire il consacre ses 232 pages à une collection complète de renseignements pratiques et techniques sur le maniement, l'emploi et l'entretien convenables des câbles métaliques pour l'industrie pétrolifère. Des sujects comme l'épissage, la fixation des manchons, etc., y sont expliquées en détail et accompagnés de gravures. Ce livret contient encore des tables de données techniques de grand intérêt.

Ce livret a une valeur unique pour tous les industriels du pétrole qui font emploi de câbles métalliques. Nous le fournissons gratuitement aux industriels du pétrole dans le monde entier. Demandez-nous dès aujour-d'hui un exemplaire de ce livret.

UNION WIRE ROPE CORPORATION

TULSA, OKLA., U.S.A.



PERFORMANCE MADE NATIONAL THE WORLD'S STANDARD DRILL PIPE

Consistent, all-round performance has earned and retained for NATIONAL Drill Pipe the complete confidence of practical operating men everywhere. The remarkable strength, the unusual toughness, the exceptional ductility, and the superior threads of NATIONAL A.P.I. Seamless Drill Pipe have given a grade of service unequalled by any other pipe. Our engineering service department will gladly co-operate with oil and gas companies on any drilling problem. Inquiries will be given prompt and careful consideration by engineers thoroughly familiar with all oil and gas fields.

Бурильные трубы National всегда работают удовлетворительно. Благодаря этому они повсеместно завоевали и удерживают за собою доверие буровых мастеров. Эти бесшовные бурильные трубы стандарта А. Р. I. (Американского Нефтяного Института) отличаются замечательной крепостью, необычайной прочностью, исключительной гибкостью и хорошей резьбой. Благодаря этим качествам они служат несравненно лучше других труб. Наш инженерный отдел с удовольствием окажет помощь нефтяным и газовым фирмам в разрешении любых проблем бурения. Все запросы немедленно и обстоятельно обсуждаются нашими инженерами, хорошо знакомы со всеми нефтяными и газовыми промыслами.

El funcionamiento conveniente y completo de el TUBO NATIONAL PERFORADOR ha ganado y mantenido la confianza completa de perforadores prácticos en todas partes. La resistencia notable, le tenacidad no común, la ductilidad exepcional y las roscas de tornillo superiores NATIONAL A. P. I. de los tubos sin costura para perforar pozos han dado un grado de servicio sin igual en otra clase de tubos.

Nuestro departamento de ingeniería con todo agrado cooperará con las compañías de gas y petróleo para resolver cualquier problema de perforación.

Las preguntas que se nos hagan recibirán atención rápida y esmerada por parte de ingenieros perfectamente familiarizados con los campos de gas y de petróleo.

Un fonctionnement impeccable et de tout repos a permis au tubage de forage NATIONAL d'acquérier et de conserver l'entière confiance des sondeurs dans le monde entier. La résistance remarquable, la ténacité exceptionnelle, la ductilité notable et les filetages supérieurs du tubage des forage sans couture NATIONAL A. P. I. lui ont permis de rendre des services insurpassés par aucun autre tubage. Notre service technique se fait un plaisier de collaborer avec les compagnies de pétrole et de gaz pour résoudre les problèmes de forage les plus variés. Toutes les demandes ou tous les problèmes soumis seront promptement et soigneusement examinés par des ingénieurs très versés dans les questions relatives aux champs de pétrole et de gaz naturel.

NATIONAL TUBE COMPANY
Pittsburgh, Pa., U. S. A.

Export Distributors:
UNITED STATES STEEL PRODUCTS COMPANY
30 Church Street, New York, N. Y., U.S.A.

MOTOR FUEL TREND FAVORS NATURAL GASOLINE

Foreign refiners and oil marketers as well as those in the United States see the steady but sure change in consumer attitude as we work out of this world depression. Price alone ceases to be the guide to purchases.

The mounting numbers of new car owners are demanding a knockless, quick-starting, carbon-free, uniform motor fuel. The use of natural gasoline is the one means of bringing about the balance.

Natural gasoline, with Ethyl fluid, serve as perfect companions in making 70 octane gasoline most economically.

Natural gasoline supplies the proper proportion of volatile hydrocarbons for quick starting.

Natural gasoline vaporizes and burns 100 per cent to leave no carbon.

Natural gasoline, correctly blended, will smooth out any irregularity in the refiner's gasoline and allows him to "build" a motor fuel that matches seasonable demands.

Warren Petroleum Company specialize only in sale of natural gasoline and are the largest dealers of this product in the world.

Иностранные, а также и американские нефтеперегонные заводы и фирмы торгующие нефтью наблюдают за последнее время постепенное повышение технических требований потребителей. Цены перестали являться главным фактором при закупках.

Все время возрастает число автомобилистов предъявляющих требование на быстро-стартующее, обезуглероженное и однородное топливо, обладающее качеством антинок. Употребление натурального газолина является единственным средством для выполнения этих условий.

Натуральный газолин в соединении с этилом служит прекрасной комбинацией для наиболее экономного способа получения газолина номер 70 октан.

Натуральный газолин дает правильную пропорцию летучих углеводородов для быстрого пуска в ход машины.

Натуральный газолин испаряется и сгорает полностью и не оставляет несгоревшего углерода.

Правильно составленная смесь натурального газолина выравнивает всевозможные неправильности в газолине полученном нефтеперегонкой и дает возможность приспособления качеств последнего к сезонным требованиям.

Warren Petroleum Company специализирует исключительно на торговле натуральным газолином и является самым крупным продавцом этого продукта во всем мире.

Los refinadores y petroleros extranjeros así como los de los Estados Unidos ven el cambio firme y seguro en la actitud de los consumidores a medida que salimos de esta depresión mundial. Los precios solos dejan de ser los guías de las compras.

Los números poseedores de nuevos automóviles están exigiendo un combustible con el que los motores no golpeen, arranquen fácilmente y queden libres de carbón. El uso de la gasolina natural es uno de los medios de llegar al equilibrio.

La gasolina natural con flúido Etílico sirve perfectamente para hacer económicamente la gasolina 70 octane.

La gasolina natural suministra en proporción conveniente los hidrocarbonos volétiles para facilitar el arranque.

La gasolina natural se vaporiza y se quema 100 por ciento sin dejar nada de carbón.

La gasolina natural, correctamente mezclada, facilitará cualquiera irregularidad en las refinerías de gasolina permitiéndoles obtener un combustible para motor que corresponda con la demanda actual.

La Warren Petroleum Company se especializa en sólo en vender gasolina natural y son los comerciantes de este producto mas grandes del mundo.

Les raffineurs et vendeurs de pétrole à l'étranger, ainsi que ceux des Etats-Unis observent le changement d'attitude progressif mais incontestable du consommateur, au fur et à mesure que nous sortons de la dépression mondiale. Le prix cesse d'être le seul guide pour l'achat.

Les nouveaux propriéetaires d'automobiles, en nombre croissant, exigent un carburant moteur antidétonant, à démarrage facile, exempt de carbone, et de composition uniforme. L'emploi de l'essence naturelle est précisément le moyen pour réaliser cet équilibre.

L'essence naturelle, avec le fluide Ethyl, sont ensemble tout indiqués pour préparer économiquement l'essence 70 octane.

L'essence naturelle fournit les proportions convenables d'hydrocarbones volatils pour assurer le démarrage facile.

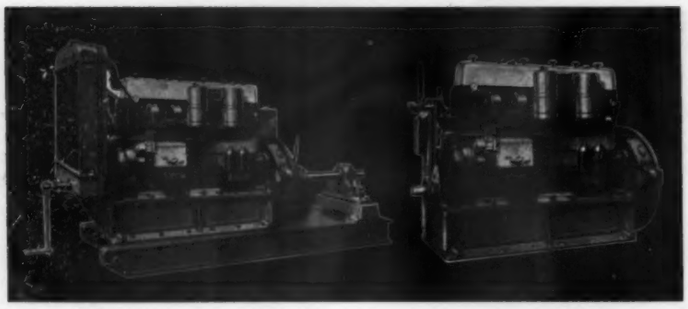
L'essence naturelle se vaporise et brûle complètement sans laisser aucun résidu de carbone.

L'essence naturelle, correctement dosée, atténuera toute irrégularité de l'essence des raffineurs et permettra à ces derniers de mettre au point un carburant moteur qui répondra aux exigences saisonnières.

La Warren Petroleum Company est spécialisée seulement dans la vente de l'essence naturelle et est le plus important distributeur de ce produit dans le monde entier.

We specialize only in the sale of Natural Gasoline and will be pleased to serve you in quantities large or small.

WARREN PETROLEUM COMPANY
National Bank of Tulsa Bldg.,
TULSA, OKLAHOMA, U.S.A.



HESSELMAN DRILLING UNIT AND ENGINE ONLY, 180 H.P.

Waukesha multi-cylinder vertical engines are specially built for every oil field operation. Horsepowers range from 12 horsepower to over 300 horsepower. They are made for natural gas, gasoline, distillates, Diesel oils, and even for steam.

The Hesselman type of spark ignition oil engine shown above is a solid injection engine that operates on the same cheap fuels as a Diesel engine. In six-cylinder types, these Hesselman Engines are built in five sizes; the four-cylinder models are available in 25 horsepower to 100 horsepower capacities.

In our advertisement, which appears elsewhere in this issue, the most popular sizes of Waukesha Engines are illustrated:

Fig. 1. Standard Portable Power Unit, 10 h.p.-40 h.p.

Fig. 2. Explosion Proof Power Unit, 25 h.p.-65 h.p.

Fig. 3. Portable Power Unit, 60 h.p.-120 h.p.

Fig. 4. Drilling Engine with Reduction Gear, 100 h.p.-150 h.p.

Fig. 5. Cable Tool Drilling Unit, 85 h.p.-120 h.p.

Fig. 6. Drilling Engine, 175 h.p.-300 h.p.

Fig. 7. Hesselman Oil Engine for Drilling, 150 h.p.-300 h.p.

Fig. 8. Fuel Octane Rating Laboratory Engine.

Многоцилиндровые вертикальные двигатели WAUKESHA специально сконструированы для всевозможных работ на нефтяных промыслах. Они изготовляются мощностью от 12-ти лошадиных сил и до более чем 300 лош. сил. Эти двигатели строятся для работы естественным газом, газолином, дистиллатами, дизельным топливом и даже для пара.

Нефтяной двигатель с зажиганием типа Hesselman, изображенный выше, относится к двигателям с вопрыскиванием топлива. Он работает на таком же дешевом топливе, как и дизель. Шестицилиндровые двигатели с зажиганием Hesselman строятся пяти разных мощностей, а четырехцилиндровые — от 25 до 100 лош. сл.

В нашем об'явлении, которое помещено в этом журнале, имеются иллюстрации двигателей WAUKESHA наиболее ходких размеров, а именно:

Фиг. 1 — стандартная переносная силовая установка, 10 лош. сил — 40 л. с.

Фиг. 2 — силовая установка неподверженная взрыву, 25 лош. сил — 65 л. с.

Фиг. 3 — Переносная силовая установка, 60 лош. сил до 120 л. с.

Фиг. 4 — двигатель с редукционными шестернями для бурения, 100 лош. с. — 150 лош. сил.

Фиг. 5 — установка для канатного бурения, 85 лош. сил — 120 лош. сил.

Фиг. 6 — двигатель для бурения, 175 лош. сил — 300 лош. сил.

Фиг. 7 — нефтяной двигатель Hesselman для бурения, 150 л. сил — 300 л. с.

Фиг. 8. — двигатель, работающий горючим с октанной характеристикой лабораторного класса.

Los motores verticales multicilíndricos, de marca Waukesha, se construyen especialmente para toda clase de servicio en explotaciones petrolíferas. Se ofrecen en modelos de 12 a más de 300 caballos de fuerza. Fundicionan con gas natural, gasolina, destilados, petróleos de motor Diésel, y también con vapor.

El motor de petróleo, con encendido eléctrico, tipo Hesselman, que mostramos arriba, es un firme modelo de inyección, que funciona con los mismos combustibles baratos que se consumen en un Diésel. En modelos de seis cilindros, estos de tipo Hesselman se construyen en cinco tamaños. Los modelos de cuatro cilindros desarrollan de 25 a 100 caballos de fuerza.

En otro anuncio, en este número, mostramos los modelos más populares de motores Waukesha, que son:

Fig. 1. Grupo motor portátil, tipo Standard, de 10 a 40 caballos de fuerza.

Fig. 2. Grupo motor a prueba de explosión, de 25 a 65 caballos de fuerza.

Fig. 3. Grupo motor, tipo portátil, de 60 a 120 caballos de fuerza.

Fig. 4. Máquina perforadora con engranaje de reducción, de 100 a 150 caballos de fuerza.

Fig. 5. Grupo para perforación con cable, de 85 a 120 caballos de fuerza.

Fig. 6. Máquina perforadora, de 175 a 300 caballos de fuerza.

Fig. 7. Motor de petróleo Hesselman para perforación de 150 a 300 caballos de fuerza.

Fig. 8. Motor de laboratorio para determinar la fuerza del combustible en grado octano.

Les moteurs verticaux multicylindriques de marque Waukesha sont construits spécialement pour les divers emplois des champs pétrolifères. Il en existe toute une gamme allant de 12 à 300 chevaux-vapeur. Ils peuvent fonctionner avec le gaz naturel, l'essence, les distillés, les pétroles de moteur Diesel, et même avec la vapeur.

Le moteur de pétrole, à allumage par étincelle, du type Hesselman, représenté ci-dessus, est un moteur à injection solide qui fonctionne au moyen des mêmes carburants bon marché que ceux employées dans le moteur Diesel. Dans les modèles à six cylindres, ces moteurs Hesselman sont fournis en 5 capacités à 180 chevaux-vapeur; les modèles à quatre cylindres existent en capacités de 25 et de 100 chevaux vapeur.

Dans notre annonce, insérée ailleurs dans la présente publication, on trouvera des reproductions des modèles les plus populaires de Moteurs Waukesha, à savoir:

Fig. 1. Groupe moteur portatif, type standard, 10 à 40 Hp.

Fig. 2. Groupe moteur à l'épreuve des explosions, 25 à 65 Hp.

Fig. 3. Groupe moteur portatif, 60 à 120 Hp.

Fig. 4. Machine de forage avec engrenage de réduction, 100 à 150 Hp.

Fig. 5. Groupe de forage avec câbles, 85 Hp à 120 Hp.

Fig. 6. Moteur de forage, 175 Hp à 300 Hp.

Fig. 7. Moteur de forage à pétrole Hesselman, 150 à 300 Hp.

Fig. 8. Moteur de Laboratoire pour déterminer la force du combustible de qualité octane.

WAUKESHA MOTOR CO.
WAUKESHA, WISCONSIN, U.S.A.

TYPE "B" CONTROL CASING HEAD

The Type "B" Control Casing Head combines in one strong and compact casing head all of the qualities necessary to meet the average modern drilling requirements. Quick opening and closing provides absolute control at all times. The plug is notched to close against the drilling line. The by-pass opening below the valve seat makes a direct opening into the casing to relieve pressure on the valve seat, and provides a means for the introduction of mud-laden fluid or steam when killing gas or preventing fire. Lugs are provided on each side of this control head for anchoring down the hook-up. The Type "B" Control Head is for 2,000 and 3,000 pound test pressures.

Контрольная головка типа "В" для обсадных труб построена прочно и компактно и обладает всеми качествами, необходимыми для ведения бурильных работ новейшими методами. Быстрота открытия и закрытия обеспечивает абсолютный контроль в любое время. Пробка снабжена вырезом для надежного затвора. Боковой отвод (байпасс) находится ниже седла задвижки и имеет отверстие прямо в буровые трубы, чем уменьшается давление на седло задвижки. Благодаря этой конструкции, имеется возможность подавать тяжелый грязевой раствор или пар для прикрытия газов, или для предохранения от пожара. По обоим сторонам контрольной головки имеются приливы для захвата головки во время под'ема или спуска. Контрольная головка типа "В" пригодна для пробных давлений в 2000 и 3000 англо-фунтов.

El tipo "B" de cabeza de control de revestimiento es muy firme y compacto, con todas las características necesarias para satisfacer los modernos requisitos de la perforación. La rápida apertura y cerradura provee control absoluto en todo momento. El obturador está muescado para cerrarse en la tubería perforadora. El orificio de desviación debajo del asiento de la válvula permite una entrada directa al revesrevestimiento, para disminuir la presión sobre el asiento de la válvula, y provee un medio seguro para la introducción de líquido cargado de cieno o de vapor para apagar el gas y evitar incendio. Hay soportes en cada lado de esta cabeza de control para el anclaje de la conexión. El tipo "B" de cabeza de control es para 2.000 y 3.000 libras de presión ensayada.

Le Tête de Revêtement Type "B" de contrôle réunit, dans une tête de revêtement forte et compacte, toutes les qualités permettant de donner satisfaction aux besoins modernes courants de forage. Pouvant s'ouvrir et se fermer rapidement, elle assure un contrôle absolu à tout moment. L'obturateur est entaillé afin de se fermer contre le câble de forage. L'ouverture en dérivation, située en dessous du siège de la soupape, assure une ouverture directe dans le revêtement, soulageant ainsi la pression qui s'exerce sur le siège de soupape, et introduit dans le système un moyen d'admission du fluide ou vapeur chargée de boues, quand on détruit les gaz ou qu'on se prémunit contre les dangers d'incendie. Cette tête de contrôle a été pourvue, de part et d'autre, de cornières destinées à ancrer à la base le dispositif d'accrochage. La tête de contrôle type "B" est appelée à supporter des pressions d'épreuve de 2000 et de 3000 livres.

TYPE "D" DOUBLE ROLLER OIL SAVER

Type "D" Roller Oil Saver is the double packed type that fits any casing head or control head. This oil saver has an extra set of packing rubbers below the regular packing that is used when the upper set of rubbers are removed through the side plates on the oil saver. Chilled rollers, above the packing, guide the line and prevent wear on both the line and the oil saver. Screw crank handles are used to adjust the upper packing rubbers. For drilling in heavy gas or high pressures we recommend the Nolos Plunger Oil Saver shown in our page advertisement in this issue.

Роликовый предохранительный сальник типа "D" снабжен двойной набивкой и может быть установлен с любой головкой для обсадных труб или с любой контрольной головкой. Этот предохранительный сальник имеет добавочный комплект резиновых набивок, расположенных снизу обычных набивок. Эта добавочная набивка служит тогда, когда верхний комплект резиновых набивок вынут через боковые плитки сальника.

Закаленные ролики, расположенные сверху набивки, служат направляющими для каната и предохраняют от износа как канат, так и сальник. Верхняя набивка регулируется от руки при помощи винтов с рукояткой. Для бурения при большом присутствии газов, или при высоком давлении, мы рекомендуем плунжерный предохранительный сальник Nolos, изображенный в нашем об'явлении на другой странице этого журнала.

El tipo "D" de rodillo ahorrador de petróleo es de doble empaquetadura, que puede colocarse en cualquier cabeza de control o cabeza de revestimiento. Este ahorrador de petróleo tiene un juego adicional de empaquetaduras debajo de la empaquetadura corriente que se usa cuando el juego superior se quita por las placas laterales del ahorrador de petróleo. Rodillos de acero especial, arriba de la empaquetadura, guian la línea y evitan el desgaste de la línea y del mismo ahorrador. Manivelas de tornillo se emplean para ajustar el juego de empaquetaduras superiores. Para perforación en gas denso o altas presiones recomendamos el ahorrador de petróleo de tipo de émbolo Nolos, mostrado en nuestro anuncio en el presente número.

Le Récupérateur de Pétrole type "D" à Rouleau est le type à double garniture qui est adapté à toute tête de revêtement ou tête de contrôle. Ce récupérateur de pétrole est pourvu d'un jeu supplémentaire de caoutchoucs de garniture au-dessous de la garniture habituelle qu'on emploie quand le jeu supérieur de caoutchoucs sont enlevées par les plaques latérales du récupérateur de pétrole. Des rouleaux trempés, situés au-dessus de la garniture, guident la canalisation et empêchent l'usure tant de la canalisation que du récupérateur. On emploie des manivelles à vis pour ajuster les caoutchoucs supérieurs de garniture. Pour le forage en pétroles lourds ou sous de fortes pressions, nous recommandons les récupérateur de pétrole Nolos à plongeur, qui est représenté sur notre page d'annonce dans le présent numéro de revue.

THE OIL WELL IMPROVEMENTS COMPANY
TULSA, OKLAHOMA, U.S.A.

GRANT STRAIGHT REAMER

Cutters in the GRANT straight reamer are inclined in a circumferential plane and in a radial plane. This gives a shearing action and also presents the cutters to the formation in such a way that the whole length of the cutter does its share of cutting. The lower end of the radially inclined cutter is set somewhat inward of the radius to which it is desired to finish the hole. The upper end is set out to the full finished radius. Any undersized part of the hole to be rounded out is first met by the lower end of the cutter, and as it is lowered and rotated, it gradually cuts out to the full size of the hole desired. If it sticks in the hole no added power is needed to pull reamer loose, the slightest upward movement removing it from contact with formation. The cutters are easily and quickly replaced at the rig without the use of special tools. Six different styles of cutters are available for use with this tool, making it one of the most versatile reamers on the market today.

Резцы прямолинейного римера GRANT расположены наклонно как к окружности поперечного сечения, так и к площади продольного сечения римера. Такое расположение облегчает срезывание грунтов, причем каждая точка режущей поверхности резцов выполняет свою долю этой работы. Нижняя сторона резца, расположенного с уклоном к радиусу, срезывает грунт по окружности несколько меньшего диаметра, чем конечный диаметр законченной скважины. Верхняя же сторона резца срезывает грунт до полного окончательного диаметра. Любая часть скважины, имеющая диаметр, меньший чем окончательный, при прохождении встречается сперва с нижней стороной резца, а затем по мере углубления и при вращении инструмента постепенно срезывается до полного желаемого диаметра. Если ример завязнет в грунте, то для его освобождения не требуется дополнительных усилий, так как малейший под'ем римера освобождает его от контакта с грунтом. Разборка резцов производится быстро и легко на полу буровой вышки, причем для этого не требуется специальных инструментов. Резцы изготовляются шести разнообразных типов, благодаря чему этот ример является наиболее универсальным из всех существующих на рынке.

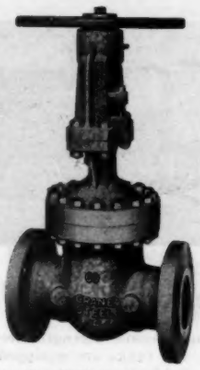
Las herramientas cortadoras del escariador recto GRANT están inclinadas en un plano circunferencial y en un plano radial. Esta disposición produce una acción de cizalla y presenta también las heramientas cortadoras a la formación de un modo en que la completa longitud de cada herramienta hace su parte en el corte. El extremo inferior de la herramienta cortadora inclinada radialmente está colocado un tanto hacia adentro del radio al cual se desea perforar el agujero. El extremo superior colocado al radio de la completa perforación. Cualquiera parte de insuficiente diámetro, del agujero, por redondearse, es repasada primeramente por el extremo inferior de la herramienta cortadora, y a medida que ésta desciende en movimiento, corta gradualmente hasta dejar el agujero al diámetro deseado. De paralizarse en le agujero, no se requiere fuerza adicional para aflojar el escariador, pues dándole un leve tirón hacia arriba, se desprende el contacto con la formación. Las herramientas cortadoras pueden quitarse y reinstalarse con facilidad y rapidez, sin la ayuda de utensilios especiales. Se ofrecen seis estilos diferentes de herramientas cortadoras para uso en este escariador, lo cual hace que este equipo sea uno de los más útiles del mercado.

Sur l'alésoir droit GRANT, les fraises sont inclinées selon un plan circonférentiel et selon un plan radial. Ce montage assure une action coupante particulièrement efficace, car les fraises attaquent le métal d'une manière telle que la longueur entière de chacune d'elle particip à la taille. La partie inférieure de la fraise inclinée radialement est ajustée dans une position légèrement à l'intérieur du rayon que l'on désire donner au trou final. L'extrémité supérieure de la fraise est ajustée de façon à coincider avec la longueur totale du rayon fini. Toute partie du trou en dessous de la cote, devant être arrandie à la cote, est tout d'abord attaqué par l'extrémité inférieure de la fraise, et comme celle-ci est animée d'un mouvement de rotation et graduellement abaissée, elle taille progressivement le trou jusqu'à ce qu'il ait pris les dimensions finales désirée. Si la fraise vient à se coincer au fond du trou, il n'est nullement besoin d'augmenter la puissance pour dégager l'alésoir, le plus léger mouvement dirigé vers le haut suffisant à lui faire perdre contact avec le métal. Le remplacement des fraises se fait rapidement, sans aucune difficulté, sur la perceuse même, sans demander l'emploi d'outils spéciaux. Six modèles différents de fraises peuvent s'obtenir pour emploi sur cet outil, ce qui en fait un des alésoirs les plus pratiques qu'on puisse trouver actuellement sur le marché.

GRANT OIL TOOL COMPANY

2042 East Vernon Avenue

LOS ANGELES, CALIF., U.S.A.



No. 76X Series 60
Cast Steel Gate Valve

No. 371X Series 60
Cast Steel Globe Valve

CRANE CAST STEEL VALVES FOR PIPE LINE SERVICE

Every pipe line installation faces the severe overloads that come from surging in the lines. Only all-steel materials in gate valves and fittings will offset this danger and protect your lines from fire hazards and severe pipe strains.

One installation, the oldest equipped with cast steel gate valves, has not suffered a shut-down due to gate valve trouble in all the 18 years that Crane Cast Steel Gate Valves have been in service!

You can use Crane Series 60 Cast Steel Gate Valves in high pressure lines and be sure of safe, efficient operation at all times. Wherever these cast steel gate valves have been installed they have made distinctive service records.

Crane supplies a variety of pipe line equipment in all-steel material for every type of refinery service. Thousands of Crane valves and fittings are in use in oil and gas fields, pipe lines, refineries and distributing stations.

Все трубопроводы работают при больших перегрузках, возникающих от неравномерного движения жидкости в трубах. Для предохранения трубопроводов от порчи и от пожаров, их необходимо снабжать стальными задвижками и стальными фитингами, так как только таковые в состоянии выдержать тяжелые условия работы.

На одном трубопроводе, самом старом из оборудованных стальными задвижками, установлены стальные литые задвижки CRANE, и за все 18 лет их службы не было ни одной остановки из-за порчи задвижек.

При установке стальных литых задвижек CRANE серии 60, на трубопроводах высокого давления, можно быть вполне уверенным в постоянной безопасности и продуктивности работы. Где бы эти задвижки не применялись, их работа повсюду давала прекрасные результаты.

Фирма CRANE изготовляет разнообразную стальную арматуру для трубопроводов нефтеперегонных заводов всех типов. Тысячи задвижек и фитингов CRANE установлены и работают на нефтяных и газовых промыслах, трубопроводах, нефтеперегонных заводах и распределительных станциях.

Toda instalación de tubería está sujeta a severas sobrecargas provenientes del oleaje en las líneas. Solo la construcción enteramente de acero de las válvulas de compuerta y sus accesorios puede sobreponerse a este peligro y proteger la tubería contra las amenazas de incendio y severas tensiones físicas.

Una instalación, la más antigua de todas las provistas con válvulas de compuerta de acero fundido, no ha tenido accidente alguno debido a desarreglo de sus válvulas de compuerta durante todos los 18 años en que su buen servicio ha dependido de las válvulas de compuerta Crane de acero fundido.

Las válvulas de compuerta Crane de acero fundido de la serie 60 pueden emplearse de acero fundido de la serie 60 pueden emplearse en tubería de alta presión con la absoluta certeza de que siempre funcionarán de un modo correcto, en todo sentido. En toda instalación en que se han empleado, estas válvulas de compuerta de acero fundido han establecido precedentes de excelente servicio extraordinarios.

La compañía Crane suministra una gran variedad de accesorios para tubería, todos de acero, para toda clase de servicio de refinería. Millares de válvulas y accesorios Crane se emplean actualmente en campos petrolíferos y de gas natural, sistemas de tuberías, refinerías y estaciones distribuidoras.

Toutes les tuyauteries doivent parfois supporter de fortes surpressions, et seuls les raccords et vannes tout acier peuvent écarter les dangers qui en résultent et éviter les avaries et les incendies.

La canalisation la plus ancienne, comportant des vannes en acier moulé, n'a jamais subi un seul accident, du fait que, depuis 18 années, elle est munie de Vannes Crane en Acier Moulé!

Les Vannes Crane de la Série 60 peuvent être employées pour les canalisations à haute pression pour assurer la sécurité et un rendement maximum. Partout où elles ont été utilisées, elles ont toujours donné satisfaction.

Crane fabrique une grande diversité de matériel tout acier pour tous usages dans les raffineries. Des milliers de vannes et de raccords Crane sont employés dans les champs pétrolifères et à gaz, les raffineries, les stations de distribution et pour les pipelines.

Write for illustrated catalogs covering our complete line of valves.

CRANE CO.

836 SOUTH MICHIGAN AVE., CHICAGO, ILL., U.S.A.

MALONEY BOLTED STEEL STORAGE TANKS

The first knocked-down bolted steel storage tanks were built by Maloney. Today, where tanks are needed to store oil, water, or lighter products of oil, Maloneys offer every modern improvement and are most economical. They are made in capacities of 65 to 10,000 bbls., A.P.I. Specifications.

Maloney Tanks are made of highly rust-resistant Keystone Copper Steel, and have patented offset seams and joints throughout, including top seams. Maloney's special cloth-inserted rubber packing is used in all seams. All seams are reinforced with heavy steel channels. Decks are of new segmental construction and are supported by new 2" x 2" steel deck rafter, attachable to sheets with bolts held in place. Ladders are constructed of heavy steel angles. Special bolts of 90,000 pounds tensile strength are used throughout. All tanks are equipped with improved combination vacuum-pressure valve and thief hatch, and new large clean-out plate, 30" x 48". Every Tank is gun-spray painted, interior with new Chromated Iron Oxide Corrosion-resisting Paint, exterior with high grade heat-reflecting aluminum paint.

Maloney offers a new self-supporting, non-sagging, non-skid, sectional steel Stairway and Walkway, which is set on strong brackets attached to tanks and has no ground supports.

Maloney Tanks, and Stairways and Walkways, are packed in steel-bound crates for export, and are marked to conform with the customs regulations of the countries to which they are shipped.

Фирма Maloney первая начала строить резервуары разборного типа на болтах. В настоящее время резервуары Maloney считаются наиболее экономными для хранения нефти, воды или легких нефтяных продуктов. Они строятся вместимостью от 100 до 1600 баррелей и отвечают спецификациям Американского Нефтяного института (A.P.I.).

Верхние и нижние швы вакуумных резервуаров укреплены с внутренней стороны угольниками в 2д.х2д.х1-8 д. Кроме того они имеют вертикальные стяжки из угольников в 2д.х2д.х1-4д. Лестницы и стяжки прочно укреплены внизу и наверху. Эти резервуары выдерживают давление в 16 унций и вакуум в 1-2 унции.

Резервуары Maloney строятся из нержавеющей стали марки Keystone Copper Steel; все листы, включая верхний ряд соединены между собою гладкими швами, причем между всеми швами проложена специальная прорезиненная материчатая прокладка; болты имеют разрывное усилие в 90.000 англо-фунтов; подпорки площадок и лестниц сделаны из стальных угольников тяжелого сечения; резервуары вместимостью от 2000 до 10000 баррелей имеют консоли для поддержки крыши. Все резервуары снабжены вакуумными клапанами, люками для взятия проб и люками для чистки.

Все резервуары окрашены как внутри, так и снаружи механическим способом специальной алюминиевой краской Maloney высшего качества. В состав этой краски входит 1 3-4 фунта алюминия на один галлон краски.

Резервуары Maloney упаковываются для экспорта в деревянные клетки со стальными обручами и маркируются согласно таможенным правилам тех стран, в которые они направляются.

Los primeros tanques remachados, fueron construídos por Maloney. Actualmente, doadequiera que se necesitan tanques para almacenar petróleo, agua u otros productos más ligeros que el petróleo, los tanques depósito Maloney son los más económicos. Se construyen con capacidad para contener desde 100 hasta 10.000 barriles, según las especificaciones del American Petroleum Institute.

Los tanques Maloney están reforzados con ángulos de 2 x 2 x ⅛ pulgadas por la parte interior de las costuras, arriba y en el fondo, y con ángulos de 2 x 2 x ¼ pulgadas arriba y abajo de las riostras de conexión. Tanto las riostras como las escaleras están fuertemente unidas con codos de hierro. Estos tanques mantienen una presión de 16 onzas y un vacío de ½ onza.

Los tanques Maloney están hechos de acero cuprífero, altamente resistente a la oxidación y todas las costuras o uniones están volteadas con empaquetadura de tela de caucho especial de Maloney; los remaches tienen resistencia a la tensión de 90.000 libras. Todos los tanques están provistos de válvulas eficientes para presión y vacío, tubos para tomar muestras, más planchas circulares de ¾ para la limpieza. Todos los tanques están pintados interior y exteriormente por pulverización de pintura de aluminio especial de Maloney.

Los tanques Maloney se empacan en huacales para exportación con ligaduras de acero y se marcan de acuerdo con los reglamentos de las aduanas.

Les premiers réservoirs boulonnés ont été construits par Maloney. Actuellement, chaque fois qu'on a besoin d'emmaganiser de l'eau, du pétrole ou des produits plus légers, les réservoirs Maloney sont les plus économiques. Leur capacité varie de 100 à 10.000 barils et leur construction est conforme aux spécifications de l'Institut Américain du Pétrole.

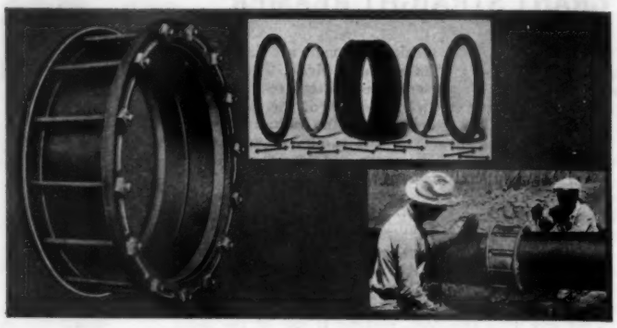
Les réservoirs Maloney sont renforcés aux coutures internes supérieures et inférieures par des cornières de 2" x 2" x ¼", et, de haut en bas, par des tirants de 2" x 2" x ¼". Les tirants et les échelles sont eux mêmes renforcés de haut en bas par des goussets. Ces réservoirs peuvent résister à une pression de 16 onces et à un vide d'½ once.

Les réservoirs Maloney sont en acier cupriféré Keystone fortement antirouille, et toutes leurs coutures ou joints sont déportés et munis de garnitures spéciales Maloney en toile caoutchoutée; la résistance à la traction des boulons employés est de 90.000 livres. Tous les réservoirs sont munis de soupapes efficientes pour la pression et le vide, et de trappes à prélèvements, et comportent, en outre, des plaques de nettoyage, circulaires de ¾. Chaque réservoir est peint à l'intérieur et à l'extérieur par pulvérisation d'une peinture spéciale à l'aluminium Maloney.

Les réservoirs Maloney sont logés dans des caisses à clairevoie pour l'exportation et marqués en conformité avec les exigences de la douane du pays de destination.

MALONEY TANK MFG. CO.

TULSA - - - - - OKLAHOMA, U.S.A.



DRESSER STEEL COUPLINGS STYLE 38

Dresser Steel Couplings, Style 38, are available for joining all sizes and kinds of plain-end pipe, from ½-inch diameter to the largest diameter of pipe produced. The use of Dresser Couplings on pipe that carries oil, gas, gasoline, air, steam or water assures uninterrupted service at all pressures. Dresser Gaskets that have been proved by years of actual service are available for each kind of service.

It is very easy to join two lengths of pipe with a Dresser Coupling. One follower ring and one rubber gasket are slipped over each pipe-end. One middle ring goes in between. Then these parts are brought together. Bolts are inserted and drawn up evenly all around. This completes a joint that will remain permanently and absolutely tight.

Throughout the world, more than 100,000 miles of plain-end pipe have been joined with Dresser Couplings. These modern joints are the product of the world's largest and oldest manufacturer of couplings, clamps, sleeves and fittings for pipe lines. Write for information about the Dresser representative nearest to you.

Стальные фланцы Dresser типа 38 пригодны для соединении всевозможных труб с гладкими концами, начиная от ½ д. в диаметре и до самых больших размеров, имеющихся на рынке. Трубопроводы для подачи нефти, газа, газолина, пара или воды, снабженные фланцами Dresser, работают надежно и безперебойно при любых давлениях. Фланцы Dresser, испытанные втечение многих лет в действительной службе, изготовляются для любых условий работы.

При помощи фланцев Dresser очень легко соединить между собою две трубы. На каждый конец трубы надевается одно кольцо и одна резиновая прокладка. Одно промежуточное кольцо устанавливается между ними. Затем эти части соединяют между собою болтами, равномерно подтягивая их по окружности. Это дает постоянное и надежное соединение.

На всем земном шаре имеется более 100.000 миль трубопроводов из труб с гладкими концами, соединенных между собою фланцами Dresser. Эти фланцы изготовляются самым большим и самым старым фабрикантом в мире, который также производит хомуты, муфты и прочную арматуру для трубопроводов. Справтесь о местонахождении ближайшего представителя фирмы Dresser.

Los Acoplamiento Dresser de acero, Estilo 38, sirven para unir tubos de extremidades sencillas, de todos los diámetros y de todas clases, desde los de ½ pulgada hasta los de diámetro más grande. Empleando Acoplamientos Dresser en tuberías que llevan petróleo, gas, gasolina, aire, vapor o agua, queda asegurado el servicio sin interrupción a todas las presiones. Las empaquetaduras Dresser que han sido experimentadas por largos años de servicio las hay disponibles para toda clase de servicios.

Es muy fácil unir dos tubos con el Acoplamiento Dresser. Se introduce un anillo y y una empaquetadura de caucho en cada una de las extremidades que se desea unir. Un anillo intermedio va entre los dos. Después se unen ambas partes, se insertan los pernos y se aprietan por parejo alrededor. Así queda terminada la unión, que será permanente y absolutamente estanca.

En todo el mundo más de 100.000 millas de tubos de extremidades sencillas han sido unidos con Acoplamientos Dresser. Estas uniones modernas son el producto de los más grandes manufactureros del mundo, de acoplamientos, grapas manguitos, y avíos para tuberías. Escriba preguntando quien es el representante Dresser más próximo de Ud.

Les Accouplements d'acier Dresser, Style 38, servent à joindre les tubes à extrémités unies de toutes dimensions et de tous genres, à partir d'un diamètre d'½ pouce jusqu'au plus grand diamètre fabriqué. L'emploi d'Accouplements Dresser sur du tubage destiné au transport de pétrole, de gaz, d'essence, d'air, de vapeur ou d'eau, assure un service continu sous toutes les pressions. Les joints Dresser qui ont fait leur preuves au cours de nombreuses années de service sont disponibles pour les services les plus divers.

Il est très facile de joindre deux longueurs de tubage au moyen d'un Accouplement Dresser. On introduit un anneau et un joint de caoutchouc à chaque extrémité du tube. On place un anneau central entre deux. On rapproche alors ces parties l'une de l'autre. On insère les boulons et on les serre uniformément tout autour. On réalise ainsi un joint permanent qui restera strictement étanche.

Dans le monde entier, plus de 100.000 milles de tubage à extrémité unie ont été joints au moyen des Accouplements Dresser. Ces joints modernes sont le produit du plus grand et du plus ancien fabricant du monde en accouplements, brides, manches et accessoires pour conduites. Demandez-nous le nom du représentant Dresser le plus proche de votre établissement.

We will be pleased to send additional information on the complete line of Dresser Couplings if you write to us.

S. R. DRESSER MANUFACTURING CO.

BRADFORD - - - - - - PENNSYLVANIA, U.S.A.

MOLY

. . . an alloy every oil man should know

Moly is an abbreviation for Molybdenum—an alloy that plays an important part in oil production and refining.

From the pipe couplings in the well to the mighty return bends, the oil industry requires the highest grade steels. Molybdenum, usually in combination with other alloys, imparts to steel the physicals needed to fill any special need.

The 4%-6% chromium tubing containing Molybdenum is proving itself the steel best suited for high temperature oil still parts. Similarly, nickel-molybdenum steels and the lower percentage chrome-molybednum steels are consistently solving the other oil production steel problems.

Any executive interested in oil production and refining should be familiar with the advantages Molybdenum imparts to steel and iron. Molybdenum usually provides an inexpensive and efficient solution to any steel or iron problem. Write for "Molybdenum," our free book containing detailed information about this important alloy. Ask about our free engineering and experimental facilities at your service.

Moly есть сокращенное название Малибдена — сплава, который занимает важное место в нефтяной и нефтеперегонной индустриях.

Начиная от муфт для труб нефтяных скважин и кончая ответственными возвратными головками, нефтяная индустрия требует для своего оборудования высококачественную сталь. Малибден, обычно в комбинации с другим сплавом, придает стали те физические свойства, которые требуются для любых специальных целей.

Сталь, содержащая от 4%—6% хрома и с примесью Молибдена, является лучшей сталью для изготовления труб для нефтеперегонных печей, работающих при высоких температурах. Точно также никкель-молибденовые стали и стали с низким содержанием хром-молибдена непрерывно разрешают требования на специальные стали для нефтяной индустрии.

Каждый нефтеработник, заинтересованный в добыче или переработке нефти, должен быть знаком с теми физическими качествами, которые сообщаются стали и железу добавкой молибдена. Молибден обычно является дешевым и надежным средством для разрешения задач получения любых сталей и любого железа. Требуйте нашу бесплатную книгу "Molybdenum", в которой имеются детальные сведения об этом ценном сплаве. Требуйте наши бесплатные технические советы и услуги по специальным исследованиям.

Moly es la abreviatura de Molybdenum —una aleación que tiene parte muy importante en la producción y refinación de petróleo.

Desde los empalmes de los tubos en los pozos hasta los codos y curvas más grandes, la industria del petróleo requiere el más alto grado de acero. Molybdenum generalmente en combinación con otras aleaciones, da al acero lo que físicamente necesita para satisfacer cualquiera exigencia especial.

Las tuberías de 4 a 6 por ciento de cromo que contienen molibdeno, es el mejor acero propio para las altas temperaturas de las piezas en los alambiques de petróleo. Todo director interesado en producción y refinación de petróleo debiera conocer las ventajas que el Molibdenum da al hierro y al acero. El Molybdenum generalmente da el medio eficáz y no costoso de resolver los problemas de hierro o acero.

Escriba pidiendo "Molybdenum" nuestro libro gratis que contiene informes detallados de esta aleación importante. Preguntenos acerca de nuestras facilidades gratis de ingeniería que están a sus ordenes.

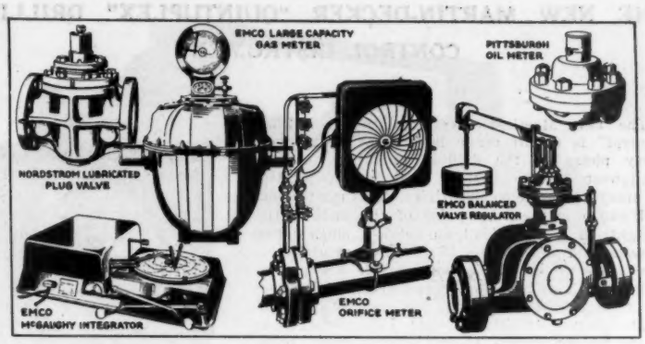
Moly est une abréviation de Molybdenum—un alliage qui joue un rôle important dans la production et le raffinage du pétrole.

Depuis les accouplements de tubage dans le puits jusqu'aux grandes courbes de retour, l'industrie pétrolifère a besoin d'aciers de toute première qualité. Le molybdène, généralement en combinaison avec d'autres alliages, communique à l'acier les propriétés demandées pour satisfaire tout besoin particulier.

Le tubage à 4%-6% de chrome et à teneur de molybdène est reconnu de plus en plus comme l'alliage d'acier convenant le mieux pour les pièces de l'alambic de pétrole soumises à des températures élevées. De même, les aciers au nickel-molybdène et les aciers à faible teneur de chrome-molybdène permettent de résoudre constamment les autres problèmes de la production du pétrole relatifs à l'acier.

Tout chef dans une entreprise de production ou de raffinage de pétrole ne devrait pas ignorer les avantages que le molybdène communique à l'acier et au fer. Le molybdène fournit généralement une solution économique et efficace à tout problème relatif au fer ou à l'acier. Demandez-nous de vous envoyer gratuitement notre livret "Molybdenum" qui contient des renseignements détaillés sur cet alliage important. Profitez des facilités techniques et expérimentales que nous mettons gratuitement à votre disposition.

CLIMAX MOLYBDENUM COMPANY
500 FIFTH Avenue, New York, U.S.A.
In Canada: Railway & Power Engineering Corp., Ltd., Montreal.
Cable Address: "MOLYBDENUM" New York.



PITTSBURGH EQUITABLE HAS COMPLETE LINE OF METERS

The Pittsburgh Equitable Meter Company builds the largest and most complete line of meters and regulators in the world for the measurement and control of gas, petroleum and water. They have also developed many auxiliary products for those industries which enable users to make substantial reductions in operating expenses and reduce losses in transmission and distribution systems.

Nordstrom Lubricated Plug Valves have been installed by gas and petroleum companies in every country of the world. The efficiency in operation, in that they always open and close easily; the fact that they give a positive shut off at all times; and their exceptional long service are advantages which should be carefully considered before valve purchases are made.

The products illustrated above are fully described in our catalogs which will be sent to engineers and buyers interested.

Фирма Pittsburgh Equitable Meter Company изготовляет самую большую и комплектную в мире серию счетчиков и регуляторов для измерения и контроля газа, нефти и воды. Эта фирма также разработала много вспомогательных аппаратов для газа, нефти и воды, которые дают возможность значительно со кратить оперативные расходы и уменьшить потери в транспортных и распределительных системах.

Клапаны Nordstrom с пробкой и смазкой устанавливаются газовыми и нефтяными фирмами во всех странах света. Продуктивность их работы заключается в том, что они всегда легко открываются и закрываются; всегда дают надежный и полный затвор; имеют исключительно продолжительный срок службы. Эти качества должны быть приняты во внимание при выборе и покупке клапанов.

Инструменты изображенные выше, подробно описаны в наших каталогах, которые высылаются нами инженерам и заинтересованным покупателям.

La Pittsburgh Equitable Meter Company construye el surtido más grande y completo del mundo de cortadores y reguladores para medir y gobernar petróleo y agua. Tambien construyen muchos productos auxiliares para esas industrias, quepermiten a quienes las usan, hacer reductiones considerables en los gastos de explotación y reducir pérdidas en los sistemas de transmisión y distdibución.

Las válvulas Nordstrom de Tapón Lubricado han sido instaladas por las compañías de gas y petróleo en todos los países del mundo. La eficacia en el trabajo; su acción de abrirse y cerrarse fácilmente; el hecho de que en todo tiempo interrumpen aficazmente; y su largo servicio exepcional, son ventajas que debieran considerarse antes de comprar válvulas.

Los productos que se ven arriba están completamente descritos en nuestros catálogos que serán enviados a los ingenieros y compradores interesados.

La Pittsburgh Equitable Meter Compány fabrique l'assortiment le plus yaste et le plus complet de compteurs et de dispositifs de réglage, du monde entier, pour mesurer et régler le gaz, le pétrole et l'eau. Cette compagnie a créé de nombreaux articles auxilaires, pour ces industries, qui permettent à ceux qui les emploient de réaliser d'importantes économies dans leurs frais de fonctionnement et de réduire les pertes subies dans les systèmes de distribution et de transmission.

Les soupapes de fermeture à graissage Nordstrom sont posées par les compagnies de gaz et de pétrole dans tous les pays du monde. Leur efficacité de fonctionnement, du fait qu'elles s'ouvrent et se ferment toujours avec facilité; le fait qu'elles assurent une fermeture positive en tout temps; et l'usage exceptionnellement long qu'elles font constituent des avantages qu'il convient de prendre sérieusement en considération avant de faire aucun achat de soupapes.

Les articles représentés ci-dessus sont l'objet d'une description complète dans nos catalogues que nous nous ferons un plaisir d'adresser aux ingénieurs et acheteurs susceptibles de s'y intéresser.

PITTSBURGH EQUITABLE METER COMPANY
MERCO NORDSTROM VALVE COMPANY
PITTSBURGH, PENNA., U.S.A.

Representatives: South & Central America—Meters and Valves. The Armco International Corp., Calle Reconquista, 336, Buenos Aires, Argentina.

Representatives and Licensees: Canada & Newfoundland—Meters and Valves. Peacock Bros., Ltd., University Tower Building, Montreal.

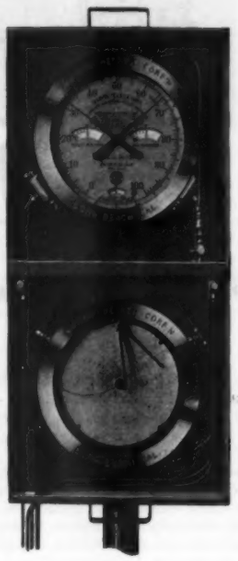
Representatives and Licensees: Europe, Africa, Australia, Southern Asia—Merco Nordstrom Valves. Audley Engineering Corporation, Newport, Shropshire, England.

THE NEW MARTIN-DECKER "QUINTUPLEX" DRILLING CONTROL INSTRUMENT

The new Martin-Decker "Quintuplex Drilling Control" is a full range instrument that covers every phase of the drilling operation, on the shallowest or the deepest wells, with positive accuracy and extreme sensitivity. This master control gauge is the very pulse of the drilling rig. Weight on bottom, load on derrick, slush pump pressure, torque in the drill pipe and rotary table speeds are all shown at a glance, on one twelve-inch dial. Five individual units are installed separately and substantially in one case; Weight Indicator, Super-Sensitive Weight Indicator, Torque Gauge, Slush Pump Gauge and Rotary Table Tachometer. All elements are standard, one in no way interfering with or depending on the functioning of the others; any of them quickly and easily removed and replaced without affecting the operation of any of the others, and each one providing the driller with necessary information for complete drilling control.

A single recording gauge records weight, torque and mud pump pressures on one extra large chart, thus eliminating the installation and maintenance of several recording gauges and the daily care of extra charts and recording each day's complete record on one chart.

The Quintuplex gauge and combination recorder case are mounted in a heavy steel box, ready for installation.



„Новый инструмент фирмы MARTIN-DECKER CORP., называемый "Quintuplex Drilling Control" (пятикратный контроль бурения) отмечает совершенно точно и с чрезвычайной чувствительностью все фазы бурильных работ как в самых мелких, так и в самых глубоких скважинах. Этот основной инструмент является как бы пульсом бурильных работ. На двенадцатидюймовом циферблате сразу же видны следующие показания: давление на долото, нагрузка на вышку, давление в грязевом насосе, крутящее усилие на бурильных трубах и скорость вращения ротора. В одном футляре прочно установлено пять отдельных индивидуальных приборов, а именно: индикатор веса, сверхчувствительный индикатор веса, указатель крутящего усилия, манометр грязевого насоса и счетчик скорости вращения ротора. Все эти приборы стандартные, причем каждый из них ни в какой мере не связан и не зависит от работы остальных. Любой из них может быть быстро и легко снят и заменен без какого-либо влияния на работу других инструментов. Каждый из этих приборов дает буровому мастеру все необходимые данные для полного контроля бурильных работ.

На одном самозаписывающем приборе с экстра-большим бланком производятся одновременно записи веса, крутящего усилия и давления в грязевом насосе. Это устраняет необходимость установки нескольких самозаписывающих аппаратов и ухода за ними. Также не приходится ежедневно иметь дело с несколькими бланками, так как комплектные записи получаются ежедневно на одном и том же бланке.

Пятикратные указательные приборы и комбинированный самозаписывающий аппарат монтированы в тяжелом стальном ящике, вполне готовом для установки в буровой.

El nuevo "Regulador Quintuple de Perforación" (Quintuplex Drilling Control) de la Martin-Decker, es un instrumento de escala completa que comprende todas las fases de la perforación de pozos, desde los más bajos hasta los más profundos, con positiva exactitud y extrema sensitividad. Este notable instrumento constituye el verdadero pulso del trabajo de perforación. El peso al fondo, la carga sobre la torre, la presión de la bomba de cieno o fango, el esfuerzo de reacción en el tubo del taladro y las velocidades de la mesa giratoria, quedan todas acusadas a la simple vista, en un cuadrante de doce pulgadas de diámetro. Cinco grupos individuales se instalan separadamente en casi una sola caja: el indicador de peso, el indicador de peso supersensitivo, el manómetro de esfuerzo de reacción, el manómetro de la bomba de cieno y el taquímetro de la mesa giratoria. Todos los elementos son de construcción normal. El funcionamiento de uno no perturba el funcionamiento de otro, pues no hay dependencia de acción entre ninguno de ellos. Cualquiera puede quitarse y reinstalarse sin afectar el funcionamiento de los restantes. Cada elemento procura la necesaria información para asegurar un gobierno completo de todo el trabajo de perforación.

Un sencillo indicador acusa el peso, el esfuerzo de reacción y las presiones de la bomba de cieno, sobre un registro bien grande, evitándose así la instalación y la conservación de varios instrumentos registradores y el cuidado diario de adicionales registros. El funcionamiento completo queda diariamente anotado en un solo registro.

El instrumento Quintuplex y caja de registro de combinación están montados en una caja de acero bien resistente, lista para inmediata instalación.

Le nouveau "Contrôleur de Forage Quintuplex" de Martin-Decker est un instrument de portée complète qui couvre toutes les phases des opérations de forage, quelle que soit la profondeur des puits creusés, et cela avec une précision rigoureuse et une sensibilité extrême. Ce manomètre de contrôle centralisé est en quelque sorte le pouls de l'appareillage de forage. Le poids exercé au fond du puits, la charge de la grue, la pression de la pompe à boue, l'effort de torsion dans le tuyau de forage et les vitesses de la table pivotante apparaissent tous sur un cadran unique de douze pouces, ce qui permet d'en prendre connaissance en un clin d'oeil. Cinq instruments de fonction distincte sont installés séparément et solidement assujettis dans un coffret unique, à savoir: Indicateur de poids, Indicateur de poids ultra-sensible, Manomètre enregistreur d'efforts de torsion, manomètre de pompe à boue et Tachymètre de table tournante. Tous ces divers éléments sont standard, aucun d'eux ne gênant le bon fonctionnement des autres ou dépendant du fonctionnement de ceux-ci; on peut rapidement, et sans aucune difficulté, enlever et remplacer l'un quelconque de ces instruments sans affecter en quoi que ce soit le fonctionnement d'aucun des autres appareils. En un mot, l'ensemble de ces instruments fournit à l'ouvrier-foreur tous les renseignements nécessaires au contrôle parfait du forage.

Un manomètre-enregistreur unique enregistre les pressions de la charge, de l'effort de torsion et de la pompe à boue, sur une planche de grandes dimensions, ce qui supprime l'installation et l'entretien de plusieurs manomètres-enregistreurs, ainsi que l'ennui de tenir journellement plusieurs planches supplémentaires, qu'il faut à la fin de chaque journée recopier sur une planche unique.

Le coffret contenant combinaison manomètre et enregistreur Quintuplex est monté dans un coffre renforcé en acier, tout prêt à être installé.

MARTIN-DECKER CORP.
LONG BEACH, CALIF., U.S.A.

EXPORTERS PETROLEUM AND ITS PRODUCTS

We specialize in all grades of stabilized natural gasoline and high octane motor spirits. Our natural gasoline is highly valuable for blending with Russian and Roumania heavy naphthas. Our plants can manufacture any specifications required. Inquiries for your requirements will be appreciated.

If you are buyers of crude or any petroleum products we are in position to supply you through our Gulf Terminal connection at Texas City, Texas, or Corpus Christi, Texas.

The officers of this company, A. F. Wood, Dale W. Moore, L. C. Holloway, are men long experienced in manufacturing and the importing of petroleum products. Unexcelled service assured.

Мы специализируемся в области производства всех сортов стабилизованных бензинов из естественных газов и в производстве моторного топлива с высокой октанной характеристикой. Наш бензин из газа является чрезвычайно ценным для смешения его с тяжелыми русскими и румынскими нефтями. Наши заводы могут изготовлять продукты любой требуемой спецификации. Просим обращаться к нам с запросами.

Если вам нужна сырая нефть или любые нефтепродукты, мы в состоянии отпустить вам таковые со станций Gulf Terminal в Texas City, Texas или Corpus Christi, Texas.

Во главе нашей фирмы стоят A. F. Wood, Dale W. Moore, L. C. Holloway, имеющие долгий опыт по производству и импорту нефтепродуктов. Вы можете быть уверены в нашей безграничной кооперации.

Nos dedicamos con especialidad a toda clase de gasolina natural estabilizada y espíritus de gran volatilidad para motores. Nuestra gasolina natural es muy valiosa para su mezcla con naftas de Rusia y Rumania. Nuestras plantas pueden producir estos combustibles de acuerdo con las características que se especifiquen. Solicitamos su correspondencia.

Si Uds. son compradores de petróleo crudo o de otros productos petrolíferos, estamos preparados para suministrárselos rápidamente desde nuestros puntos de embarque en Texas City, Texas, or Corpus Christi, Texas, E. U. A.

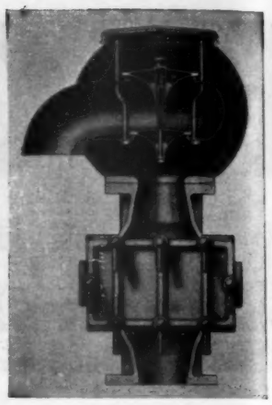
Los administradores de esta compañía, los Srs. A. F. Wood, Dale W. Moore, L. C. Holloway, son hombres de vasta experienca en la manufactura y en la exportación de productos de petróleo. Podemos, por lo tanto, garantizar un servicio excelente.

Spécialité d'essence naturelle stabilsée et de carburants à haute teneur en octane. Notre essence naturalle est recommandée pour le mélange aux naphtes lourdes de Russie et de Roumanie. Nos usines peuvent livrer tous produits désirés en ce genre. Veuillez nous passer vos spécifications.

Si vous êtes acheteur de pétrole brut ou d'autres produits dérivés, nous pouvons vous faire les livraisons par l'intermédiaire de notre Gulf Terminal à Texas City (Texas) ou Corpus Christi (Texas).

Les directeurs de la société, MM. A. F. Wood, Dale W. Moore, L. C. Holloway, sont des spécialistes dans la préparation et l'importation des pétroles. Services irrépochables.

WOOD-MOORE CORPORATION
MANUFACTURERS—MARKETERS
Cable Address: "WOODMOORE"
TULSA, OKLA., U.S.A.



"VAREC" TANK VENTS

"VAREC" TANK VENTS and FLAME ARRESTERS reduce evaporation and prevent fire from entering tank. They are made of pure aluminum and are impervious to corrosive action from sulphur compounds or atmospheric elements. The Valve has renewable seats and is equipped with "VAREC" patented hyperbolic pallets which control "blow down" resulting in greater gas conservation.

The "VAREC" FLAME ARRESTER is designed like an entrainment separator and the element pulls apart to permit thorough inspection and positive cleaning. See advertisement elsewhere herein. The Unit has more flow capacity than any other.

ВЕНТИЛИ ДЛЯ РЕЗЕРВУАРОВ И ЗАДЕРЖИВАТЕЛИ ПЛАМЕНИ МАРКИ "VAREC" уменьшают улетучивание паров из резервуаров и недопускают пламя в резервуары. Они изготовляются из чистого алюминия и не подвержены раз'едающему действию сернистых соединений и атмосферы. Вентили имеют с'емные седла и снабжены патентованными гиперболическими клапанами "VAREC", контролирующими "обратный ход", благодаря чему увеличивается сбережение паров.

Задерживатели пламени "VAREC" сконструированы ввиде сборного сепаратора, причем отдельные элементы легко разбираются, благодаря чему возможна полная инспекция их и тщательная очистка. Наше об'явление напечатано в этом журнале. Установка имеет большую пропускную способност, чем какая-либо иная.

LAS VENTOSAS Y LOS EXTINGUIDORES DE LLAMAS "VAREC" reducen la evaporación y evitan la entrada del fuego al tanque. Se hacen de aluminio puro y son inafectados por la acción corroyente de los compuestos de azufre y elementos atmosféricos. La válvula tiene asientos reemplazables y está equipada con paletas hiperbólicas "Varec" patentadas, que regulan el escape, de lo que resulta una mayor conservación del gas.

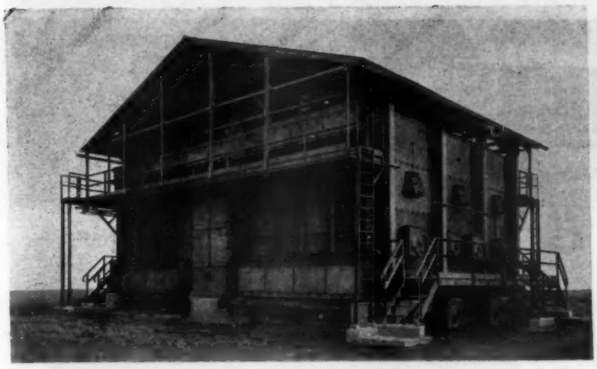
EL EXTINGUIDOR DE LLAMAS "VAREC" se construye como un separador de entrenamiento, cuyo elemento se desarma para permitir fácil inspección y positiva limpieza. Sírvase ver nuestro anuncio en otra página de esta revista. Tiene mayor capacidad para el flujo que todo otro aparato similar.

EVENTS DE RESERVOIR et PARE-FLAMME "VAREC" pour réduire l'évaporation et éviter les incendies dans les réservoirs. En aluminium pur inattaquable par les composés sulfureux ou les éléments atmosphériques. La soupape comporte des sièges remplaçables et des palettes "VAREC" hyperboliques brevetées évitant les échappements et assurant une meilleure conservation des gaz.

Le PARE-FLAMME "VAREC" est conçu suivant le principe du séparateur d'entrainement, avec un élément amovible qui permet de le visiter et de la nettoyer parfaitement. Voir l'annonce paraissant dans ce numéro. Rendement supérieur à celui de tout autre appareil similaire.

Write for Complete Catalogue.

THE VAPOR RECOVERY SYSTEMS COMPANY
COMPTON, CALIF., U. S. A.
Cable Address: "VAREC," Compton.
Export Branches: Brussels, Belgium, 9 Rue du Moniteur; New York, 30 Church Street; Maracaibo, Venezuela, Apartado 331.



To meet the demand for high heat transfer rates in oil heating for distillation and cracking units, Lummus has designed a distinctly new type of oil heater.

Placed in operation two years ago the first of these Lummus oil heaters is running on a topping operation in parallel with a conventional heater of modern design. The same crude, heated from and to the same temperatures, is being charged to both heaters. At the same efficiency, the capacity per square foot of heating surface of the Lummus Heater is 200% that of the conventional heater. Yet, under the same conditions, the maximum absorption rate of any of the heating surface in the Lummus Heater is lower than the maximum absorption rate in the conventional design of heater.

Another Lummus heater has been in operation for nine months in oil cracking service; a third has recently been installed for the same service; three more are under construction. For complete details of Lummus Oil Heater, write for Bulletin B-1.

Фирма LUMMUS сконструировала совершенно новый тип трубчатой печи, отвечающей нуждам нефтеперегонных и крекинговых установок, в которых при нагреве нефти, требуется высокий коэфициент теплопередачи.

Первая такая трубчатка LUMMUS, пущенная в ход два года тому назад, работает на нефтеперегонной установке параллельно с трубчатой печью новейшей конструкции. В обе трубчатки подается та же самая нефть, при одинаковой температуре. В них она нагревается до одной и той же температуры. При той же самой работе каждый квадратный фут поверхности нагрева трубчатки LUMMUS дает мощность в 200% по сравнению с максимальной мощностью в другой трубчатке. В то же самое время и при тех же самых условиях, максимальная абсорбционная способность в любом месте поверхности нагрева печи LUMMUS меньшая, чем у другой трубчатки.

Вторая трубчатка LUMMUS работает втечение девяти месяцев на крекинговой установке; третья печь недавно установлена для такой же работы; три новых трубчатки строятся в настоящее время.

Требуйте бюллетень B-1 с полными детальными сведениями о трубчатых печах LUMMUS.

Para satisfacer le demanda de un alto régimen de transferencia de calor, para el calentamiento de petróleo, en conexión con los procedimientos de destilación, la Lummus ha proyectado y construido un tipo completamente distinto de calentador de petróleo.

Puesto a funcionar hace dos años, el primero de estos calentadores, de petróleo Lummus está trabajando continuamente al lado de un calentador moderno de tipo corriente. El mismo petróleo crudo, calentado a iguales temperaturas, pasa por ambos calentadores. Sobre igual base de abastecimiento, la capacidad por pie cuadrado de superficie de calentamiento del calentador Lummus es 200% mayor que la del calentador de tipo ordinario. Sin embargo, bajo idénticas condiciones, el régimen máximo de absorción de cualquiera de las superficies de calentamiento del calentador Lummus es menor que el régimen máximo de absorción del calentador de tipo corriente u ordinario.

Otro calentador Lummus ha estado trabajando nueve meses en una planta de destilación de petróleo. Un tercer calentador ha sido recientemente instalado para el mismo servicio, y hay tres más bajo construcción. Para información completa sobre el calentador de petróleo Lummus, sírvase pedirnos nuestro Boletín B-1.

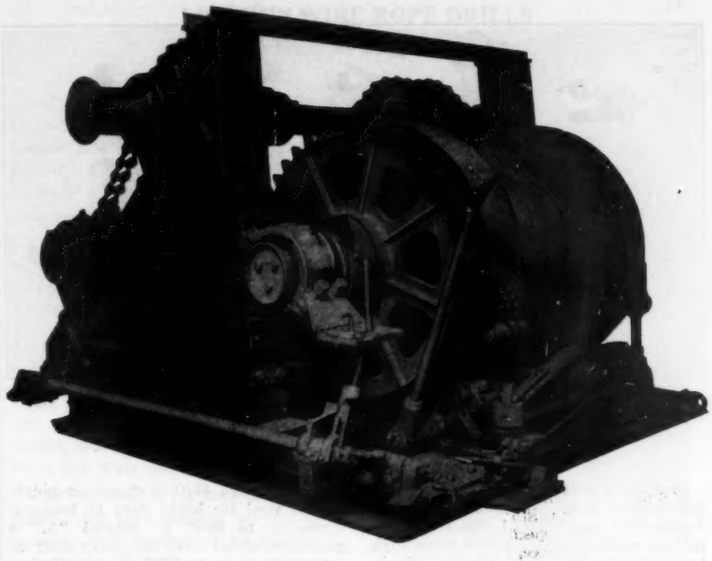
Afin de donner satisfaction à la demande en taux élevés de transfert de chaleur dans le chauffage du pétrole pour les appareils de distillation et de cracking, Lummus a conçu et réalisé un modèle entièrement nouveau de réchauffeur de pétrole.

Mis en service il y a deux ans, le premier de ces réchauffeurs de pétrole Lummus fonctionne en marche continue parallèlement avec un réchauffeur du type classique de construction moderne. Le même pétrole brut, pris et amené aux mêmes températures, est introduit dans les deux réchauffeurs. Toutes choses étant égales, la capacité du réchauffeur Lummus par pied carré de surface de chauffe est le double de celle du réchauffeur classique. Et cependant, dans les mêmes conditions d'opération, le taux d'absorption maximum de toute portion de la surface de chauffe du réchauffeur Lummus est inférieur au taux d'absorption maximum constaté dans le réchauffeur de modèle classique.

Un autre réchauffeur Lummus a été en service pendant neuf mois dans l'atelier du cracking du pétrole; un troisième réchauffeur a récemment été installé pour le même service; trois autres sont actuellement en cours de construction. Pour obtenir des détails complets sur le Réchauffeur de pétrole Lummus, demandez-nous notre Bulletin B-1.

THE LUMMUS COMPANY

50 CHURCH STREET, NEW YORK, U.S.A.



IDEAL NO. 34-32-9-DU ROTARY DRAW WORKS (Patented)

The IDEAL No. 34-32-9-DU Draw Works is the latest development in rotary drilling. The Draw Works is mounted on a heavy structural steel frame, welded and bolted together, making it a self-contained assembly requiring no framing into the derrick head board.

The advantages are saving of time in moving and rigging up, elimination of adjustments, freedom from vibration in the derrick, rugged construction throughout, capable of handling loads up to 12,000 feet.

The drum on this unit is the largest manufactured, having 54" diam., brake rims with 10⅝" face, and drum 32" diam. × 35" long, grooved for 1" or 1⅛" or 1¼" wire rope. This grooving prevents pinching or flattening of the wire line. The drum shaft is 9" in diameter, mounted on heavy Hyatt roller bearings. The drum and flanges are cast steel of one piece, preventing any spreading of flanges under heavy load.

The IDEAL Type K-54 Brakes are patented and especially designed for this Draw Works. These brakes provide a compound braking leverage and have an equalizing feature.

The height of the complete unit is 7 ft. 7 inches, width 12 feet, and length 10 ft. 9 inches, net weight 28,160 pounds.

The drum and shafts are boxed separately for expor. Total gross weight. 36,000 pounds.

Лебедка IDEAL No. 34-32-9-DU для вращательного бурения предоставляет собою последнее усовершенствование в этой области. Лебедка установлена на сварной и сболченой раме из тяжелой сортовой стали, благодаря чему получается комплектная установка, которую не приходится укреплять к балке вышки.

Преимущества такой лебедки заключаются: в сбережении времени при передвижении и установке, в отсутствии необходимости выверки, в отсутствии вибраций, в прочности и жесткости всей конструкции и в способности выдерживать нагрузки, возникающие при бурении до 12.000 футов.

Барабан лебедки имеет диаметр в 54" и является самым большим из всех изготовляемых. Тормазные ленты имеют ширину в 10⅝", а канатный барабан диаметром в 32" и длиною в 35", имеет желобки для стального каната в 1", или 1⅛", либо 1¼". Эти канавки предохраняют канат от защемлений и сплющиваний. Вал барабана имеет 9" в диаметре и работает в тяжелых роликовых подшипниках Hyatt. Барабан и фланцы отлиты заодно целое из стали, что предотвращает сдвиг фланцев при тяжелых нагрузках.

Патентованные тормаза IDEAL типа K-54 специально сконструированы для этих лебедок. Эти тормаза имеют общую рукоятку и уравновешивающее приспособление.

Полная высота комплектной лебедки составляет 7'7", ширина 12' и длина 10'9". Чистый вес 28.160 англо-фунтов.

Барабан и валы упаковываются для экспорта в отдельные ящики. Общий вес в упаковке составляет 36.000 англо-фунтов.

La máquina de tracción IDEAL No. 34-32-9DU es la última palabra en perforación rotatoria. La máquina de tracción está montada sobre un firme armazón de acero de construcción, muy bien unido por soldadura y pernos, constituyendo un grupo completo, que no requiere soportes adicionales en el entablado del malacate.

Las ventajas se presentan en ahorro de tiempo en el traslado e instalación, eliminación de ajustes, independencia de vibración en el malacate y una construcción bien firme y segura en todas las piezas, que permite el manejo de cargas hasta de 12.000 pies.

El tambor de esta máquina es el más grande de todos los similares, pues tiene 54" de diámetro, con bordes de freno de 10⅝" de cara y tambor de 32" diámetro por 35" de longitud, con ranuras para cuerda de alambres de 1", 1⅛" or 1¼". Esta ranuración evita la apretadura o el aplastamiento del cable. El eje del tambor tiene 9" de diámetro y está montado en grandes cojinetes de rodillos Hyatt. El tambor y las pestañas son de acero fundido en una sola pieza, lo que evita la separación de las pestañas bajo cargas pesadas.

Los frenos IDEAL de tipo K-54 están protegidos por patentes y se hacen especialmente para esta máquina de tracción. Estos frenos suministran una fuerza de palanca multiplicada y están provistos de un dispositivo de compensación.

La altura del equipo completo es 7 pies 7 pulgadas, con anchura de 12 pies, longitud de 10 pies 9 pulgadas y un peso neto de 28.160 libras.

El tambor y el eje se embalan separadamente para el embarque de exportación. Peso bruto total, 36.000 libras.

La machine d'extraction IDEAL No. 34-32-9-DU pour le forage rotatif constitue le dernier mot dans son genre. Montée sur un gros bâti en acier profilé, elle n'exige acune charpente dans le derrick.

On ne perd pas de temps à la déplacer et à la monter, elle n'exige aucun réglage, n'occasionne pas de trépidations dans le derrick, sa construction est solide et elle permet la manutention de charges à une profondeur de 12.000 pieds.

Le tambour mesure 54 pouces de diamètre, avec des freins à jantes de 10⅝ pouces et poulie de 32 pouces de diamètre sur 35 pouces de largeur, comportant des gorges pour câble acier de 1 ou 1⅛ poucee, évitant le coincement. L'axe du tambour (9 pouces de dia.) est monté sur roulements à rouleaux Hyatt. Le tambour en acier comporte des flasques venus de fonte ne s'évasant pas sous la charge.

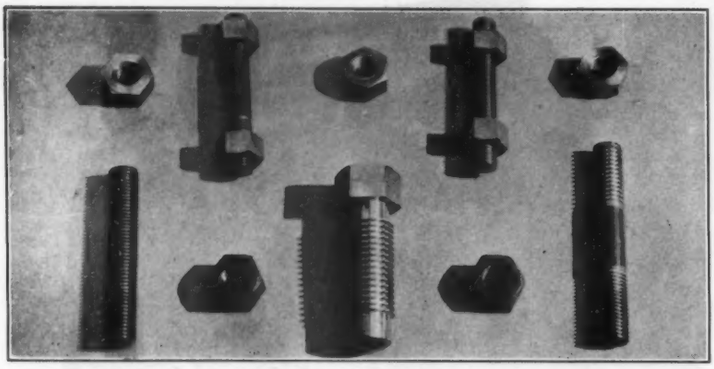
Freins IDEAL K-54 brevetés, spécialement établis pour cette machine, équilibrés et puissants.

Hauteur totale, 7 pieds 7 pouces; largeur, 12 pieds; longueur, 10 pieds 9 pouces; poids net, 28.160 livres.

Tambour et axes emballés séparément pour l'expédition. Poids brut total, 36.00 livres.

THE NATIONAL SUPPLY CORPORATION

30 Rockefeller Plaza NEW YORK, N. Y., U.S.A.



HEAT-TREATED BOLTS AND STUDS

Bethlehem manufactures Heat-Treated Alloy Steel Bolts, Studs and Pressure Screws for any special conditions involving severe service, either from high temperatures, unusual stresses, shock, fatigue or abrasion.

Steels for these products are made in Bethlehem plants, assuring scientific supervision and control of all processes of manufacture. Among Bethlehem Alloy Steels available for the manufacture of Heat-Treated Bolts and Studs are: Supertemp, a chromium-tungsten steel for severe service at temperatures up to 1,050° F. S.A.E. 4140, a chromium-molybdenum steel for heavy duty at temperatures up to 900° F. Mayari "A," a chromium-nickel steel for heavy duty at temperatures up to 900° F. Low-Carbon Mayari, a chromium-nickel steel with high resistance to shock and fatigue. Bethalon and Bethadur, low-carbon steels with high corrosion-resisting properties.

Bethlehem Oil-Quenched and Treated Nuts, hot forged, are especially recommended for use with high-temperature, high-pressure bolts and studs.

Bethlehem изготовляет из специальной стали термически обработанные болты, шпильки и винты для работы под давлением; все они пригодны для специально тяжелых условий работы, вызываемых либо высокой температурой, или необычайно высокими напряжениями, ударами, усталостью или износом от истирания.

Сталь для вышеупомянутых изделий изготовляется на заводе Bethlehem, что дает полную гарантию научного метода наблюдения и контроля всех процессов производства.

Из специальных сталей Bethlehem, применяемых для производства термически обработанных болтов и шпилек, известны следующие марки: Supertemp хромо-вольфрамовая сталь для тяжелой службы при температурах до 1,050° Ф.; SAE 4140, — хромо-молибденовая сталь для тяжелой работы при температурах до 900° Ф.; Mayari "A", — хромо-никкелевая сталь для тяжелой работы при температуре до 900° Ф.; Low-Carbon Mayari — хромо-никкелевая сталь с низким содержанием углерода, прекрасно противостоящая ударам и усталости; Bethalon and Bethadur — сталь с малым содержанием углерода, хорошо противостоящая ржавлению.

Кованные гайки Bethlehem, из закаленной в масле и отпущенной стали, особо рекомендуются для применения с термически обработанными болтами и шпильками.

La Bethlehem fabrica pernos, espárragos y tornillos de presión, de especial aleación de acero, de tratamiento térmico, para satisfacer toda condición de exigente servicio, ya se trate de temperaturas elevadas, tensiones extraordinarias o choque, ya de fatiga o esfuerzo tendente a desgaste o debilitamiento.

Las aleaciones de acero de estos productos se fabrican por la gran firma Bethlehem, lo que es garantía de exacta supervigilancia científica y gobierno absoluto de todo el procedimiento de manufactura. Entre las aleaciones de acero de la Bethlehem, que se emplean para la fabricación de sus pernos y espárragos de tratamiento térmico, se hallan: la supertemp, de cromio y tungsteno para severo servicio a temperaturas hasta de 1,050 grados Fahrenheit; la SAE 4140, de cromio y molibdeno, para servicio pesado hasta de 900 grados F.; la Mayari "A", de cromio y níquel, para servicio pesado a temperaturas hasta de 900 grados F.; la Mayari de bajo contenido de carbono, de cromo y níquel, de gran resistencia al choque y debilitamiento; las Bethalon y Bethadur, de bajo contenido de carbono, con notables resistencias a corrosión.

Las tuercas Bethlehem, tratadas al calor y templadas en aceite, forjadas en caliente, se recomiendan especialmente para pernos y espárragos sujetos a altas temperaturas y presiones.

La Bethlehem Corporation fabrique des boulons, goujons et vis de pression en acier spécial traité à chaud, pour conditions spéciales de service pénible par suite de températures excessives, efforts exceptionnels, chocs considérables, ou abrasion.

L'acier destiné à ces articles est produit par les usines de la Bethlehem qui assurent la surveillance et le contrôle scientifiques de tous les procédés de fabrication. Parmi les aciers spéciaux de la Bethlehem pour la fabrication des boulons et goujons traités à chaud, citons: le Supertemp, acier au chrome et au tungstène résistant à des températures allant jusqu'à 1,050 degrés F.; l'acier chromé au molybdène SAE 4140 pour travaux pénibles à des températures allant jusqu'à 900 degrés F.; l'acier chromé au nickel Mayari "A" pour travaux pénibles jusqu'à 900 degrés F.; l'acier chromé au nickel à basse teneur de carbone Mayari très résistant aux impacts et à la fatigue; et les aciers à basse teneur de carbone Bethalon et Bethadur très résistants à la corrosion.

Les écrous forgés à haute température, traités et trempés à l'huile Bethlehem sont spcialement recommandés pour emploi avec les boulons et goupons résistants aux hautes températures et aux fortes pressions.

We would be pleased to hear from interested parties and will send descriptive literature upon request.

BETHLEHEM STEEL EXPORT CORP.
25 Broadway, New York, N. Y., U.S.A.
Cable: "BETHLEHEM."

Export shipment of Aquagel leaving Los Angeles plant.

AQUAGEL
Trouble-Proof Colloidal Drilling Mud or Mud Conditioner

AQUAGEL is a specially selected and processed clay which contains a high concentration of gel type colloids. This type of colloid is found in small quantities in all clays and is responsible for most of the desirable qualities of the customary drilling muds. It is these gel type colloids or gel forming colloids which give clays the property of walling up the hole as it is being drilled. AQUAGEL contains at least ten times as much gel forming colloids as do the ordinary clays customarily used for drilling.

AQUAGEL and water mixed together make an excellent drilling mud which weighs 64 lbs. per cubic foot (specific gravity 1.03) and has excellent sealing and wall building properties.

Ordinarily clay drilling fluids may be conditioned and their wall building characteristics improved by the addition of one or two per cent of AQUAGEL by weight. A good drilling mud can thus be made from any ordinary clay by the addition of a small percentage of AQUAGEL.

AQUAGEL, when properly used in drilling muds, provides cheap insurance against costly fishing jobs. The proper use of AQUAGEL will prevent loss of circulation, prevent caving, prevent stuck drill pipe, reduce abrasion, suspend drilling mud solids so they will not settle out when circulation is suspended, seal off minor flows of gas and water, insure landing of long strings of casing without sticking and insure positive water-tight shut-offs in an admixture with cement.

AQUAGEL представляет собой специально отобранную и обработанную глину, которая содержит коллоиды высокой концентрации типа гелей. Этот тип коллоидов имеется в малых количествах во всех глинах и от него зависят необходимые качества обычных гряевых растворов. Каллоиды этого типа, образующие гели, имеют свойство придавать глине способность обмуровывания стенок скважины.

AQUAGEL содержит в десять раз больше этих образующих гели коллоидов, чем обыкновенные глины, обычно употребляемые при бурении.

AQUAGEL в смеси с водой дает прекрасный грязевой раствор для бурения. Вес его составляет 64 англо-фунта на 1 кубич. фут. (удельный вес 1.03) и он имеет отличные обмуровывающие качества.

Обычные грязевые растворы могут быть улучшены и их обмуровывающие качества усилены прибавлением AQUAGEL от 1 до 2-х процентов по весу. Таким образом обычный грязевой раствор может быть улучшен прибавлением небольшого количества AQUAGEL.

Правильное употребление AQUAGEL в грязевых растворах страхует от дорогостоющих ловильных работ. Правильное употребление AQUAGEL предотвращает утечку циркуляционного раствора, образование обвалов, захват бурильных труб, уменьшает износ от истирания, поддерживает состав грязевого раствора, так что при остановке циркуляции, в нем не образуется осадков; закупоривает небольшие водяные и газовые щели, обеспечивает спуск длинных колонн обсадных труб без удара их о дно скважины и, при смешении его с цементом, обеспечивает надежное закрытие воды.

Aquagel es una arcilla especialmente elegida y tratada, que contiene una gran concentración de coloides de tipo gelatinoso. Este tipo de coloide se halla en pequeñas cantidades en todas las arcillas y es responsable de la mayor parte de las buenas propiedades de los barros comunes que se utilizan en la perforación de pozos. Es este tipo de coloide de tipo gelatinoso lo que imparte a las arcillas la propiedad de proteger o cerrar el agujero mientras se perfora. Aquagel contiene, por lo menos, diez veces más coloide gelatinoso, que las arcillas que ordinariamente se emplean para la perforación.

Aquagel, mezclado con agua, produce un excelente barro de perforación, que pesa 64 libras por pié cúbico (peso específico, 1.03) caracterizándose por notables propiedades como tapador y reforzador de pared.

Los líquidos ordinarios de arcilla para perforción pueden acondicionarse, para aumentarles sus características reforzalecedoras de pared, con la adición de 1 o de 2% de Aquagel, por peso. De este modo se puede preparar un buen barro de perforación, con cualquiera arcilla ordinaria.

Aquagel, correctamente empleado en barros de perforación, provee un seguro muy económico contra costosos trabajos de reconstrucción. La atinada utilización de la Aquagel evita la pérdida de circulación, impide el hundimiento, hace imposible el atascamiento del tubo de la broca o taladro, reduce el desgaste, suspende las partículas sólidas del barro de perforación, para que no se asienten al cesar la circulación, tapa los pequeños escapes de gas y agua, asegura la colocación le largas hileras de forros sin que se incrusten y da completa seguridad de cierre hermético al agua cuando se combina con cemento.

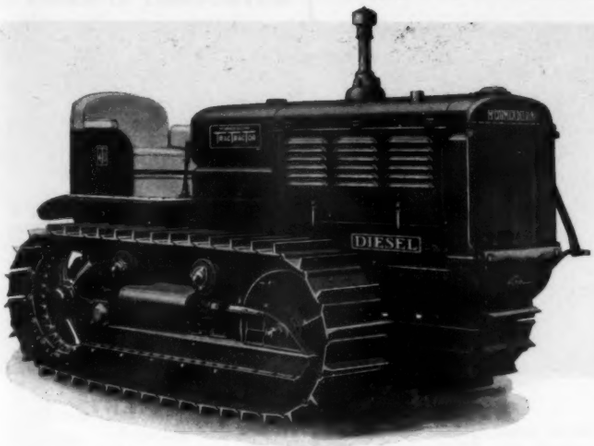
AQUAGEL est une argile spécialement sélectionnée et traitée, qui a une forte teneur de colloides du type gélatineux. Ce type de colloide existe en petites quantités dans toutes les argiles et est l'élément qui communique les qualités désirables aux boues généralement employées pour le forage. Ce sont ces colloides du type gélatineux ou colloides à formation gélatineuse que donnent aux argiles la propriété d'enuire le trou de sondage au fur et à mesure de son forage. AQUAGEL contient au moins dix fois plus de colloides a formation gélatineuse que les argiles couramment employées dans le forage.

AQUAGEL mélangé à l'eau constitue une boue pour forage excellente qui pèse 64 lbs. au pied cube (poids spécifique 1,03) et possède des propriétés remarquables comme isolant et enduit protecteur des parois.

On peut conditionner les fluides ordinaires argileux pour forage et on peut en améliorer les propriétés en tant qu'enduit en y ajoutant un ou deux pour cent du poids d'AQUAGEL. On peut ainsi préparer une excellente boue pour forage à partir de toute argile ordinaire par addition d'un faible pourcentage d'AQUAGEL.

AQUAGEL, correctement introduit dans les boues de forage, procure une assurance très économique contre les repêchages onéreux. L'emploi convenable d'AQUAGEL élimine les déperditions de circulation, empêche les éboulements, élimine les coincements de tube de forage, diminue l'abrasion, met en suspension les particules solides de boue de forage les empêchant ainsi de se déposer quand on interrompt la circulation, arrête les écoulements secondaires de gaz et d'eau, assure la pose de longues colonnes de cuvelage qui risqueraient autrement de se coincer, et assure une fermeture positivement étanche à l'eau quand on le combine à du ciment.

BAROID SALES COMPANY
LOS ANGELES, CALIF., U.S.A. HOUSTON, TEXAS, U.S.A.



McCORMICK-DEERING DIESEL-40 TRACTRACTOR

The McCormick-Deering Model TD-40 or Diesel-40 TracTracTor is operated by a four-cylinder, four-stroke-cycle, valve-in-head Diesel engine, equipped with the same type chassis as the McCormick-Deering six-cylinder T-40 TracTracTor. The big advantage is fuel economy.

The engine operates at compression pressures of approximately 550 to 575 pounds per square inch. The volumetric compression ratio is 17 : 1. Cylinders are vertical and of 4¾-inch bore and 6½-inch stroke. The engine operates at four controlled speeds of 1,100 r.p.m. and under, and since the transmission provides five speeds the tractor may move at twenty different forward speeds. The five tractor forward speeds at full-load governed engine speed of 1,100 r.p.m. are respectively 1¾, 2¼, 2¾, 3¼ and 4 miles per hour. Reverse speed is 2¼ miles per hour.

Fuel to each cylinder is filtered five times and passes through two sediment traps. Fuel-injection nozzle for each cylinder is of the closed, single-hole type. The maximum engine horsepower is 52, and maximum drawbar horsepower 42.

The TD-40 TracTracTor is especially suited for heavy road-building and maintenance jobs, snow removal, levee construction, etc. Special dust seals guard every shaft and bearing. Overall length, 140 inches; overall width, 63¾ inches; height over exhaust pipe, 87¼ inches and drawbar heights, 17¾ inches, high, and 11 inches low. The tractor readily turns within a circle of 7-foot radius.

Трактор McCormick-Deering модели TD-40 или Diesel-40 TracTracTor имеет четырехцилиндровый, четырехтактный дизель-мотор с закрытыми клапанами. Этот трактор снабжен таким же шасси, как шестицилиндровый трактор McCormick-Deering модели T40 TracTracTor. Существенное преимущество заключается в малом расходе топлива.

Двигатель работает в компрессией примерно в 550-575 англо-фунтов на кв.дюйм. Отношение объемов при компрессии составляет 17: 1. Вертикальные цилиндры имеют диаметр в 4¾ дюйма при ходе поршня 6½ дюймов. Двигатель может работать при четырех разных числах оборотов, начиная от 1000 оборотов в минуту и ниже. Так как, с другой стороны, трансмиссия имеет пятискоростную передачу, то трактор может двигаться вперед с двадцатью разными скоростями. Пять передач переднего хода, при моторе, установленном на 1000 оборотов в минуту, дают соответствующие скорости переднего хода трактора в 1¾, 2¼, 2¾, 3¼ и 4 мили в час. Скорость заднего хода составляет 2¾ мили в час.

Топливо для каждого цилиндра фильтруется пять раз и проходит через два трапа для отделения осадков. Топливо впрыскивается в каждый цилиндр через сопло закрытого типа, снабженное одним отверстием. Максимальная мощность двигателя составляет 52 лош. силы. Максимальная тяговая сила крюка — 42 лош. силы.

Трактор марки TD-40 TracTracTor особенно пригоден для тяжелых дорожно-строительных работ, ремонтных работ, очистки снега, постройки насыпей и проч.. Специальные непропускающие покрышки защищают все валы и подшипники от пыли. Полная длина трактора составляет 140 дюймов; полная ширина 63¾ дюйма; общая высота, включая выходную трубу 87¼ дюйма; высота наряжного крюка в верхнем положении 17¾ дюйма, а в нижнем положении 11 дюймов. Трактор можно повернуть по окружности радиусом в 7 фут.

El TracTracTor McCormick—Deering, Modelos TD-40 o Diesel-40, tiene motor Diesel de cuatro cilindros y ciclo de cuatro carreras, con válvula en la culata, y tiene el chasis del mismo tipo que el TracTracTor McCormick—Deering T-40 de seis cilindros. La gran ventaja es la economía en el combustible.

El motor acciona con presión de compresión, aproximadamente de 550 a 575 libras por pulgada cuadrada. La relación de la compresión volumétrica es 17:1. Los cilindros son verticales de 4¾ pulgadas de diámetro y 6½ pulgadas de carrera El motor trabaja con cuatro velocidades y 1.100 revoluciones por minuto y puesto que la transmisión de cinco velocidades, el tractor puede moverse con veinte velocidades diferentes. Las cinco velocidades hacia adelante, con plena carga y el motor dando 1.100 revoluciones por minuto, son respectivamente 1¾; 2¼; 3¼; y 4 millas por hora. La velocidad hacia atrás es de 2¼ millas por hora.

El combustible para cada cilindro se filtra cinco veces pasando por dos trampas donde se asienta. Las boquillas para la inyección del combustible en cada cilindro es del tipo cerrado de un solo orificio. La potencia máxima del motor es 52 caballos, y la tracción máxima es 42 caballos.

El TracTracTor TD-40 es propio para construcción y conservación de caminos, para quitar la nieve, construcción de diques, etc. Los ejes y cojinetes tienen guardas especiales contra el polvo. Longitud total 140 pulgadas; anchura total 63¾ pulgadas; altura sobre el tubo de escape 87¼ pulgadas; alturas de la barra de tracción 17¾ pulgadas y ll pulgadas abajo.

El tractor puede dar vuelta fácilmente en un círculo de 7 pies de radio.

Le TracTractor McCormick-Deering Modèle TD-40 ou Diesel-40 est actionné par un moteur Diesel à quatre cylindres, quatre temps, à soupapes en dessus, et équipé du même type de châssis que le TracTractor McCormick-Deering T-40 à six cylindres. Le grand avantage qu'il procure réside dans l'économie de carburant.

Le moteur fonctionne à des pressions de compression d'environ 550 à 575 livres au pouce carré. Le rapport de compression volumétrique est de 17:1. Les cylindres sont verticaux, ont un alésage de 4¾ pouces et une course de 6½ pouces. Le moteur fonctionne à quatre vitesses contrôlées de 1.100 R.P.M. et en-dessous, et étant donné que la boîte de vitesse comporte cinq vitesses, le tracteur est à même de se déplacer à vingt vitesses-avant différentes. Les cinq vitesses-avant du tracteur en régime à pleine charge du moteur tournant à 1.100 R.P.M. sont respectivement 1¾, 2¼, 2¾, 3¼ et 4 milles à l'heure. La vitesse en marche arrière est de 2¼ milles à l'heure.

Le carburant alimentant chaque cylindre est filtré cinq fois et passe à travers deux épurateurs à sédiment. Le gicleur d'injection de carburant de chaque cylindre est du type fermé, à ouverture unique. La force motrice maximum est de 52 H.P. et celle à la barre d'attelage est au maximum de 42 H.P.

Le TracTractor TD-40 convient particulièrement aux constructions et à l'entretien des routes dans le cas de travaux durs, à l'enlèvement de la neige, à la construction de digues, etc. Des pave-poussière spéciaux protègent tous les arbres et coussinets. Longueur totale 140 pouces; larguer totale 63¾ pouces; hauteur au-dessus du tuyau d'échappement 87¼ pouces; hauteurs des barres d'attelage 17¾ pouces, haut, et 11 pouces, bas. Le tracteur peut facilement tourner dans un cercle de 7 pieds de rayon.

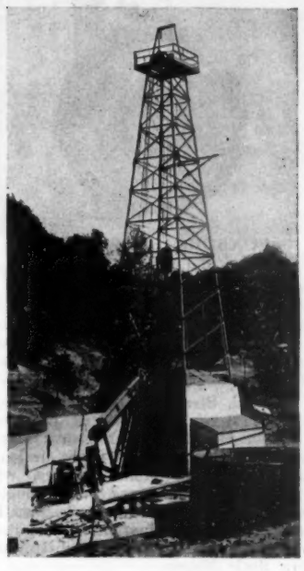
THE INTERNATIONAL HARVESTER CO.
OF AMERICA
(Incorporated)
606 So. Michigan Ave. Chicago, Illinois, U.S.A.

LESCHEN WIRE ROPE DRILLS
World's Deepest Cable-Tool Well

Leschen's "HERCULES" (Red-Strand) Cable-Tool Wire Rope drilled the world's deepest hole ever made by the cable-tool method. This well was drilled in West Virginia by the United Fuel Gas Company and it reached a depth of 9,085 feet.

The first successful wire drilling cable was made by the A. Leschen & Sons Rope Company and since then Leschen Wire Rope has helped to establish many records, not only for deep drilling, but for endurance, dependability and economy. A "HERCULES" (Red-Strand) Rotary Cable helped establish another depth record, which was a hole 10,585 feet deep drilled near Vera Cruz, Mexico, by the Penn-Mex Fuel Company.

Leschen Steel Wire Rope is capable of establishing these records because of its exceptional durability and uniformity. It is made of acid open-hearth steel wire, and every wire used is first rigidly tested to make sure that it meets the exacting Leschen requirements, which have been determined by many years of experience in the oil industry.



Стальной канат Leschen марки "HERCULES" (Red-Strand) для канатного бурения применялся при бурении самой глубокой скважины, когда-либо пройденной канатным способом. Эта скважина бурилась в штате West Virginia фирмой United Fuel Gas Company. Глубина скважины составляет 9085 фут.

Первый удовлетворительный бурильный канат был изготовлен фирмой A. Leschen & Sons Rope Company и с того времени стальные канаты Leschen установили много рекордов не только в смысле глубины бурения, но также и в смысле их выносливости, надежности и экономичности. Канат "HERCULES" (Red-Strand) для вращательного бурения установил другой рекорд глубины. При помощи этого каната фирма Penn-Mex Fuel Company пробурила около Vera Cruz, Mexico скважину глубиной в 10,585 фут.

Стальные канаты Leschen в состоянии устанавливать эти рекорды благодаря своей исключительной выносливости и однородности. Они изготовляются из стальной мартеновской проволоки. Каждая проволока до ее употребления проходит строгую инспекцию с целью убедиться, что она отвечает всем требованиям Leschen, основанным на долголетнем опыте в нефтяной индустрии.

El cable "Hercules" de Leschen (de trenzado rojo) perforó el pozo más profundo, del mundo, que se haya hecho por el método de perforación con cable. Este pozo fué perforado en West Virginia, E. U. A., por la United Fuel Gas Company, alcanzando una profundidad de 9.085 pies.

El primer cable de alambre para perforar, de resultados satisfactorios, fué construído por la A. Leschen & Sons Rope Company, y desde entonces, el cable de alambre, Leschen, ha contribuído a establecer muchos precedentes, no sólo en perforaciones profundas, sino también, en resistencia, seguridad y economía. Un cable "Hercules" (de trenzado rojo) ayudó a establecer otro precedente de profundidad, representado por un pozo de 10.585 pies, perforado cerca de Veracruz, México, por la Penn-Mex Fuel Company.

El cable de alambres de acero Leschen puede establecer estos notables precedentes, a causa de su extraordinarias duración y uniformidad. Se hace de alambre de acero Siemmens-Martin de fina calidad. Cada alambre empleado, se somete primeramente a los más minuciosos ensayos y pruebas, para estar seguro de que satisface los exigentes requisitos de la construcción Leschen, que son el resultado de muchos años de experiencia en la industria del petróleo.

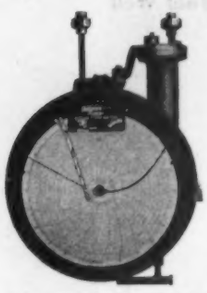
Le Câble Métallique de Leschen pour Outils à câble, "HERCULES" (brins rouges) détient le record du monde de profondeur de forage par la méthode de l'Ooutil à câble. Ce puits record a été foré en Virginie Ouest par la United Fuel Gas Company et avait atteint une profondeur de 9.085 pieds.

Le premier câble métallique de forage efficient a été fabriqué par la A. Leschen & Sons Rope Company et depuis lors, le Câble Métallique Leschen a établi de nombreux records, non seulement pour la profondeur du forage, mais aussi pour l'endurance, l'uniformité de qualité et le bon marché. C'est Câble Rotatif "HERCULES" (Brins Rouges) qui a aidé à remporter un autre record de profondeur, en l'espèce un sondage de 10.585 pieds près de Vera Cruz, Mexique, effectué par la Penn-Mex Fuel Company.

Le Câble Leschen en Acier est à même d'établir ces records grâce à sa durabilité exceptionnelle et à l'uniformité remarquable de sa qualité. Il est en fil d'acier Siemens-Martin acide, et tous les fils employés dans sa fabrication sont préalablement soumis à des essais serrés pour s'asurer qu'ils ont bien toutes les propriété exigées de la marque Leschen, standards déterminés au cours de nombreuses années d'expérience dans l'industrie pétrolifère.

A. LESCHEN & SONS ROPE COMPANY
ST. LOUIS, MISSOURI, U. S. A.
Export Distributor:
CONTINENTAL EMSCO CO., INC., NEW YORK CITY, U. S. A.
Buenos Aires London Ploesti

FOXBORO INSTRUMENTS MEET ALL PETROLEUM NEEDS



FOXBORO FLOW METER

When ordering instruments, specify Foxboro and you will always get the instrument best suited to your needs. Our most complete stock contains Indicating, Recording and Controlling Instruments for Temperature, Pressure, Flow and Liquid Level.

Gas, Oil, Steam, Water, Acids or any other fluid can be measured accurately and economically with Foxboro Meters. They are obtainable for—low pressure, high pressure, medium pressure, wide range, large volumes and small volumes. You can get Indicating, Recording, Integrating and Combination Meters, Pressure Compensated Meters and Uniform Flow Scale Meters.

Foxboro Thermometers and Pyrometers furnish temperature records of all temperatures from —300° F. to 2,800° F. The new Recording Potentiometer Pyrometer can be had in either single pen or multiple record type.

Temperature, Pressure, Liquid Level and Flow are controlled most accurately with the STABILOG System of Automatic Control. It gives One Hundred Per Cent Automatic Control at all times and under any circumstances. In a continuous process, a complete installation of STABILOGS keeps the process in perfect balance at all times by preventing the development of any upsetting surges.

Petroleum producers and refiners throughout the world have found that it pays to specify FOXBORO.

FOXBORO RECORDING POTENTIOMETER PRYOMETER

При покупке инструментов выбирайте FOXBORO и вы всегда будете иметь инструменты наиболее пригодные для ваших нужд. Фирма изготовляет чрезвычайно комплектный набор инструментов, включая индикаторы, самозаписывающие и контрольные аппараты для температуры, для давления и для уровня жидкости.

Счетчиками FOXBORO можно точно и экономно измерить газы, нефтепродукты, воду, кислоты и проч. жидкости. Они изготовляются для низких, средних и высоких давлений, для больших и для малых количеств. Вы можете приобрести у нас индикаторные, самозаписывающие, интеграционные и комбинированные счетчики, а также компенсационные и униформные самовзвешивающие счетчики.

Термометры и пирометры FOXBORO записывают температуру от 300° до 2800° по Фаренгейту. Новый самозаписывающий пирометр-потенциометр изготовляется как с одним пером, так и с несколькими перьями.

Температура, давление, уровень и об'ем контролируются чрезвычайно точно при помощи системы автоматического контроля. Этой системой достигается стопроцентный автоматический контроль в любое время и при любых условиях. При непрерывном процессе комплектная установка СТАБИЛОГОВ поддерживает этот процесс на всем его протяжении в абсолютном балансе и не допускает возникновения колебаний, растраивающих плавность процесса.

Нефтепромышленники и нефтеперегонщики всего мира считают установку инструментов FOXBORO наиболее целесообразной.

Al comprar instrumentos, especifíquense los de marca Foxboro y se obtendrá siempre lo más adecuado a los requisitos del caso. Nuestro completo surtido comprende instrumentos para indicar, registrar y regular la temperatura, las presiones y el nivel de los líquidos.

El gas, aceite, vapor, ácidos y otros líquidos pueden medirse con exactitud y economía con los instrumentos Foxboro. Se ofrecen para presión baja, presión alta, presión regular, cantidades grandes y cantidades pequeñas. Hay registradores de indicación, registro, integrales y de combinación, medidores compensados de presión y medidores de flujo de escala uniforme.

Los termómetros y pirómetros Foxboro suministran registros de temperatura desde 300 a 2800 grados Fahrenheit. El nuevo pirómetro registrador de potencialidad se ofrece en tipo de acusación sencilla y en tipo de registro múltiple.

La temperatura, la presión, el nivel y el flujo de los líquidos se gobiernan con exactitud máxima mediante el sistema de control automático STABILOG. Suministra un completo control automático en todo momento y bajo toda circunstancia. En un procedimiento continuo, una completa instalación de instrumentos STABILOG conserva toda la operación en perfecto equilibrio, durante todo el tiempo, evitando el desarrollo de toda variación trastornadora.

Los productores y refinadores de petróleo, en todas partes del mundo, han visto que resulta muy lucrativo el especificar siempre los instrumentos de marca Foxboro.

Quand vous commandez des instruments, exigez toujours la marque Foxboro, et vous serez ainsi certains de vous assurer les instruments les mieux appropriés à vos besoins. Notre assortiment, des plus complets, comprend des instruments indicateurs, enregistreurs et contrôleurs pour la température, la pression, l'écoulement et le niveau des liquides.

Au moyen des compteurs Foxboro, on peut mesurer économiquement et avec précision le gaz, le pétrole, la vapeur, l'eau, les acides, et tous autres fluides. On peut se les procurer pour —basse pressions, hautes pressions, pressions moyennes, grande portée, grands volumes et volumes réduits. Vous pouvez vous procurer des compteurs indicateurs, enregistreurs, intégrateurs et des modèles combinés, aussi des compteurs de pression à compensation et des compteurs à échelle pour uniformité d'écoulement.

Les thremomètres et les pyromètres Foxboro permettent d'enregistrer des températures allant de 300° F. a 2800° F. Le nouveau pyromètre-pontentionètre du type enregistreur peut se fournir soit en modèle à plume unique, soit en modèle à enrigestrement multiple.

Les températures, les pressions, le niveau et l'écoulement des liquides se contrôlent avec une précision rigoureuse au moyen du Système STABILOG de contrôle automatique. Ce système assure un contrôle entièrement automatique à tout moment et dans toutes les conditions. En marche continueé une installation complète d'instruments STABILOG assure un équilibre parfait au procédé, d'un bout a l'autre de l'opération, en empêchant la production de fluctuations disturbatrices.

Les producteurs et raffineurs, dans le monde entier, ont appris par l'expérience que "ça paye" d'exiger la marque FOXBORO.

THE FOXBORO COMPANY

Neponset Avenue, Foxboro, Mass., U.S.A.

DISTRIBUTORS THROUGHOUT THE WORLD

Cable Address: "FOXCO-FOXBORO"

COMPLETE PETROLEUM INSTRUMENT SERVICE

CONTINENTAL-EMSCO EQUIPMENT

This company, realizing the many hazards and difficulties encountered in drilling and producing oil wells in fields far removed from manufacturers' and warehouse stocks of drilling machinery and supplies, is maintaining competent Sales Engineers at various points throughout the world, for the assistance and convenience of operators.

Engineering suggestions, catalogs and descriptive bulletins will be supplied upon receipt of request on all items used in Exploration and Exploitation, such as EMSCO complete line of Steel Derricks, Rotary Drilling Machinery, Drill Pipe Protectors, "D&B" Pumping Equipment and details of EMSCO latest type Unitary Draw Works and "EMSCO-FORTUNE" Hydraulic Feed and Pressure Drilling Control, also GARDNER-DENVER Rotary Slush and Oil Line Pumps, Farrar & Trefts Oil Country Boilers, GARDNER-DENVER Twin Cylinder Steam Drilling Engines, LESCHEN'S WIRE LINES, CHAMPION Forged Steel Pipe Couplings, YOUNGSTOWN Tubular Goods and Walworth Drilling Gates and Control Fittings.

На промыслах, отдаленных от фабрикантов и от складов бурильных машин и оборудования, бурение нефтяных скважин и эксплоатация таковых связаны со многими опасностями и затруднениями. CONTINENTAL-EMSCO, учитывая это положение и желая помочь операторам, содержит во всех странах компетентных продавцев-инженеров.

Инженерные советы, каталоги и описательные бюллетени по оборудованию для разработки и эксплоатации промыслов высылаются по всем запросам. В это оборудование входят: стальные вышки, машины для вращательного бурения и предохранители для бурильных труб фирмы EMSCO, насосное оборудование "D & B", лебедки EMSCO последнего типа, гидравлическая подача "EMSCO-FORTUNE" и приспособление для контроля давления при бурении, грязевые насосы GARDNER-DENVER и насосы для нефтепроводов, паровые котлы FARRAR & TREFTS промыслового типа, двухцилиндровые паровые машины GARDNER-DENVER для бурения, стальные канаты LESCHEN, стальные кованные муфты CHAMPION для труб трубы YOUNGSTOWN, бурильные задвижки и контрольная арматура WALWORTH.

Esta compañía, comprendiendo los problemas y dificultades, que se presentan en la perforación y explotación de pozos petrolíferos en lugares alejados de los puntos de abastecimiento de maquinaria y materiales para el trabajo, mantiene competentes ingenieros en varios mercados del mundo para la conveniencia y beneficio de los operadores.

Sugestiones técnicas, catálogos y boletines descriptivos, se suministrarán a los interesados que nos lo pidan. Este servicio informativo versa sobre todo lo que se necesita para la exploración y explotación de yacimientos petrolíferos, refiriéndose en particular al completo surtido EMSCO de cabrías de acero, maquinaria perforadora rotatoria, protectores de tubos de taladros, equipo de bomba "D & B" y detalles del más reciente tipo de obras de extracción unitarias EMSCO y control "EMSCO-FORTUNE" de alimentación hidráulica y perforación por presión, como asi mismo, sobre las bombas rotativas GARDNER-DENVER para fango y tubería de petróleo, calderas Farrar & Trefts especiales para explotaciones de petróleo, máquinas perforadoras a vapor, bicilíndricas, de tipo GARDNER-DENVER, líneas de alambre de LESCHEN, acoplamientos CHAMPION de acero forjado, para tubería, tubería YOUNGSTOWN y compuertas de perforación y accesorios de gobierno de marca Walworth.

La compagnie ci-dessus se rendant compte des numbreaux risques et difficultés rencontrées au cours du forage et l'exploitation des puits pétrolifères dans des champs fort éloignés des fabricants et des entrepôts de stocks de machines et d'accessoires de forage, a organisé des services de ventes par ingénieurs à divers points disséminés dans le monde entier, afin de rendre service aux entrepreneurs de forage.

Des suggestions fournies par des ingénieurs spécialisés, des catalogues techniques et des fascicules descriptifs seront fourni sur simple demande concernant tous les articles employés pour l'exploration et l'Exploitation des gites de pétrole, par exemple la série complète EMSCO de grues d'acier, de machines de forage rotatif, de Protecteurs de Tubes de forage, d'Equipement de Pompe "D & B" ainsi que des détails concernant le type le plus récent de Unitary Draw Works et des appareils de contrôle "EMSCO-FORTUNE" de Forage d'alimentation hydraulique et de pression, aussi sur les Pompes Rotatives GARDNER-DENVER à boue et à canalisation de pétrole, les chaudières "Oil Country" de Farrar et Trefts, des moteurs de forage à vapeur à cylindre jumeau GARDNER-DENVER, des CABLES LESCHEN, des accouplements de tubage en acier forgé CHAMPION, des articles de tubage YOUNGSTOWN et des vannes de forage Walworth et des accessoires de contrôle.

Address your requests for further details to:

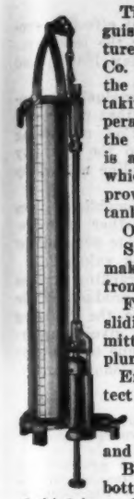
CONTINENTAL EMSCO COMPANY, Inc.

19 RECTOR STREET, NEW YORK, N. Y., U.S.A.

LONDON, England BUENOS AIRES, Argentine

Cable Address: "CONEMSCO"

OIL THIEF IS TIME-SAVER



Time-saving features distinguish the oil thief, manufactured by the Tulsa Oil Thief Co. Attention is directed to the side hook, which permits taking gravity and actual temperatures without removing the thief from the tank. There is also an extension trip rod which can be lengthened, to provide for heavy b.s. in the tank.

Other features are:

Single chain trip, which makes it possible to sample from any part of the tank.

Flat bale, eliminating chain sliding and fouling and permitting the thief to hang plumb.

Enclosed springs, which protect from sand and dirt.

Rotating valve, which eliminates scoring by sand and provides perfect seating.

Bronze rings at top and bottom removes chance of loss of thief in tank.

Инструмент для взятия проб из резервуаров, изготовленный фирмой TULSA OIL THIEF CO., отличается тем, что он сберегает рабочее время. Благодаря боковому крючку можно находить удельный вес и действительные температуры продуктов без извлечения инструмента из резервуара. Кроме того, имеется штанга для более глубокого спуска инструмента, которая может быть удлинена, что дает возможность взятия проб тяжелых осадков со дна резервуара.

Инструмент имеет следующие дополнительные достоинства:

Затвор, работающий от цепочки, что дает возможность отбора проб с любого уровня резервуара.

Плоская подвесная серьга, благодаря чему цепочка не скользит и не запутывается, а инструмент висит вертикально.

Закрытые пружины, защищенные от песка и загрязнения.

Вращающийся клапан, благодаря чему устраняется возможность образования царапин от песка и достигается правильность его насадки.

Бронзовые кольца наверху и внизу, что устраняет возможность потери инструмента в резервуаре.

El probador de petróleo construido por la Tulsa Oil Thief Co. se caracteriza por ventajas aborrativas de tiempo. Especial atención merece el gancho lateral, que permite tomar indicaciones de peso específico y de verdaderas temperaturas sin quitar el probabor del tanque. Hay también una varilla de disparo de extensión, que puede alargarse, para acondicionarse a los petróleos más densos asentados en el tanque.

Otras ventajas son las siguientes:

Disparador de cadena sencilla, que permite recojer muestra de cualquiera parte del tanque.

Disposición plana, que evita el resbale de cadena y la obstrucción, permitiendo al probador el quedar pendiente en perfecta linea vertical.

Resorte protegidos contra la arenilla y tierra.

Válvula giratoria, que evita la rayadura por la arenilla y asegura un asiento perfecto. Los anillos de bronce arriba y abajo evitan el peligro de que el probador se pierda en el tanque.

Le dispositif de prélèvement de carottes, fabriqué par la Tulsa Oil Thief Co., se distingue par les nombreuses économies de temps qu'il procure. Un de ses avantages réside dans le crochet latéral dont il est muni, qui permet de prendre la densité et les températures réelles, sans qu'il soit nécessaire de sortir l'appareil du réservoir. Il possède, en outre, une tige extensible à doigt mobile, qu'on peut allonger à volonté, afin de tenir compte de l'accumulation de pétroles lourds au fond du réservoir.

Parmi les autres caractéristiques, on peut citer:

Un dispositif extensible à chaine unique, qui permet de prélever des carottes dans n'importe quelle partie du réservoir.

Un support plat, qui supprime le dérapage et l'encrassement de la chaine, et permet au dispositif de prélèvement de carottes d'être accroché d'aplomb.

Des ressorts enfermés, ainsi à l'abri du sable et des impuretés.

Une soupape tournante, qui supprime le rayage par le sable et assure un portage parfait.

Des anneaux de bronze au sommet et à la pase, qui empêchent que l'appareil ne vienne à tomber et à se perdre dans le réservoir.

TULSA OIL THIEF CO.
W. L. WALKER CO., Distributors
800 S. Main St. Tulsa, Okla.

ALCO 4-PRONG DRAG BIT

It seems slightly inappropriate to term this a "drag" bit. Its outstanding feature is its ability to take the drag from the bit at the bottom of the hole and yet keep the hole to gauge. Two of its four prongs are heavy reaming blades, which cut the clearance and keep the hole out to gauge. The two other prongs track inside the first two and, aided by the middle pilot blades, break up the formation, which is washed to the top through large circulation holes.

The short lugs on the outside of the inner prongs prevent "walking" and insure straight, smooth hole. All cutting and wearing edges are heavily coated with specially prepared hard metals and compounds, applied by the Alco special process.

Название "drag bit" (сдвигающее долото) не совсем правильно определяет данный инструмент. Его выдающимся достоинством является способность уничтожать сдвигающее действие долота, работающего на забое, причем проходимая им скважина получается правильного диаметра. Долото снабжено четырьмя резцами, на которых два тяжелого типа служат для развертки скважины до должного диаметра. Два других резца работают по внутренней окружности и в комбинации со средними направляющими резцами дробят грунт, частицы которого вымываются из скважины через большие циркуляционные каналы.

Короткие выступы на наружной поверхности внутренних резцов не допускают сдвигающей работы долота и обеспечивают гладкость и прямолинейность скважины. Все режущие и срабатывающиеся поверхности наварены особым процессом ALCO толстым слоем специально изготовляемых твердых металлов и сплавов.

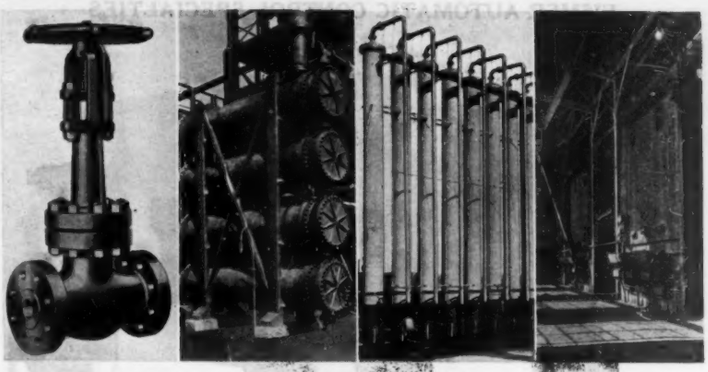
Parece un tanto inadecuado el llamar esta herramienta "boca de cortador de arrastre". Su ventaja sobresaliente es su propiedad para quitar el arrestre de la herramienta al fondo del agujero y conservar, al mismo tiempo, el agujero al diámetro del caso. Dos de sus cuatro puntas son gruesas laminas escariadoras, que cortan el paso y conservan el agujero al diametro requerido. Las otras dos puntas siguen por dentro a las dos primeras y ayudadas por las láminas centrales de guia, rompen la formación, la cual se escurre por la parte superior a través de grandes orificios de circulación.

Las proyecciones cortas en la parte exterior de las puntas interiores evitan la trepidación asegurando un agujero recto y suave. Todos los bordes cortantes y expuestos a desgaste están protegidos por gruesa capa de metales duros y composiciones especiales, aplicada por un procedimiento exclusivo de la Alco.

Le nom de trépan de raclage ne semble guère approprié à cet outil. Son avantage principal consiste en ce qu'il supprime le broutage de l'outil au fond du puits, tout en maintenant l'uniformité du forage. Deux de ses quatre pointes sont de grosses lames d'alésage qui dégagent parfaitement le trou. Les deux autres les suivent et, aidés par les lames de guidage centrales, entament la formation, les débris étant chassés vers le haut au travers des trous de circulation.

Les tétons extérieurs des pointes intérieures empêchent le cheminement de l'outil et assurent l'alignement parfait du forage. Tous les tranchants et les bords sont revêtus d'une grosse couche de métaux et de compositions spécialement préparés et appliqués suivant un procédé exclusif à la marque.

ALCO TOOL CO., Ltd.
G. Howard Hutchins, Receiver.
P. O. Box A,
Compton, Calif., U.S.A.



DROP FORGED STEEL VALVES & FITTINGS | HEAT EXCHANGERS | STILLS AND TOWERS | WATER TUBE BOILERS

VOGT PRODUCTS FOR THE REFINERY

Drop forged steel Valves, Fittings and Flanges are available in sizes, types and materials best suited for services including high pressures, high temperatures, corrosion and erosion.

Stills, Towers and pressure vessels in endless variety are manufactured of fusion welded or riveted construction.

Heat Exchangers for high pressure or vacuum service, with fixed or removable tube bundles, may be had of cast or welded all steel construction.

Other Vogt products include Water Tube Boilers of many types and sizes, Absorption and Compression Refrigerating Systems for temperatures as low as minus sixty to minus seventy Fahrenheit, wax plant equipment, etc.

Descriptive literature may be had upon request.

Фирма изготовляет стальные кованые задвижки, вентили, фитинги и фланцы по размерам, типам и материалам наиболее пригодные для самых разнообразных условий работ, включая высокие давления, высокие температуры и раз'едающие свойства жидкостей.

Фирма также изготовляет всевозможного вида трубчатки, колонны и сосуды, работающие под давлением, как сварной, так и клепанной конструкции.

Теплообменные аппараты как для высоких давлений, так и работающие при вакууме, с укрепленными или с'емными батареями трубок, изготовляются фирмой из литой стали, или стальной сварной конструкции.

Кроме того фирма VOGT изготовляет следующие продукты: водотрубные котлы многочисленных типов и размеров, абсорбционные и компрессорные холодильные системы для столь низких температур как минус 60 и минус 70 градусов по Фаренгейту, оборудованные для парафиновых заводов и пр.

Каталоги высылаются по требованию.

Ofrecemos válvulas, conexiones y bridas de acero forjado a martinete, en diferentes tamaños y tipos, y en materiales adecuados a los servicios que han de prestar, incluyendo altas presiones, altas temperaturas, corrosión y erosión.

Ofrecemos también alambiques, torres y recipientes de presión, de diversos tamaños y tipos, de construcción soldada o de construcción remachada.

Nuestros cambiadores de calor para servicio de alta presión o de vacío, con grupos de tubos fijos o amovibles, se ofrecen en construcción fundida o en construcción enteramente de acero soldado.

Otros productos Vogt son: calderas tubulares de agua de muchos tipos y tamaños, sistemas de refrigeración por absorción y compresión, para temperaturas hasta de sesenta a setenta grados Fahrenheit bajo cero, equipo para fábricas de cera, etc.

A solicitud enviaremos catálogo descriptivo.

Soupapes, raccords et brides en acier matricé en dimensions, types et matières pour faire face à toutes les conditions, hautes pressions, hautes températures, corrosion et érosion.

Alambics, tours et bacs de pression de tous genres en tôle soudée à l'autogène ou rivetée.

Echangeurs de température pour haute pression ou vide, à faisceau tubulaire fixe ou amovible, en tôle d'acier soudée à l'autogène ou en fonte.

Autres produits Vogt: chaudières aquatubulaires de tous genres et en toutes dimensions, appareils frigorifiques à absorption et à compression donnant des températures allant jusqu'à soixante ou soixante-dix degrés Fahrenheit sous zéro, appareillage pour usines à cire, etc.

Imprimés descriptifs sur demande.

HENRY VOGT MACHINE COMPANY
(Incorporated)
LOUISVILLE, KY., U.S.A.
CABLE ADDRESS: "VOGT"

FISHER AUTOMATIC CONTROL SPECIALTIES

Since 1881 Fisher Governor Company has put every effort in manufacturing a superior line of automatic pump governors, pressure regulators, steam traps, liquid level controllers, lever valves, float valves, back pressure regulators, gas regulators, and similar devices. FISHER controls are used extensively in every country in the World. For the convenience of customers there is an official FISHER representative in most of the great industrial centers.

The petroleum refining and natural gasoline industries have received great benefit in the control of their complex processes by the scientific development of FISHER Automatic Valves.

The FISHER equipment shown above, reading from left to right, is: Type No. 235 Remote Liquid Level Control; Type No. 1 Constant Pressure Pump Governor; Type ST Inverted Bucket Steam Trap; and Type No. 57 Diaphragm Motor Valve or Pressure Regulator.

The complete FISHER catalog, containing details and technical information on these automatic valves, will be mailed upon request.

С 1881 года фирма Fisher Governor Company направляет все свои усилия к изготовлению первоклассных автоматических регуляторов для насосов, регуляторов давления, водоотделителей для пара (трапы), аппаратов для контроля уровня жидкости, предохранительных клапанов, плавающих клапанов, регуляторов противодавлений, регуляторов для газа и прочих аналогичных аппаратов. Контрольные аппараты FISHER широко применяются по всему свету. Для удобства клиентуры FISHER имеет своих представителей во всех крупных индустриальных центрах.

Нефтеперегонная индустрия и индустрия естественного газа получили большие выгоды от применения научно построенных автоматических клапанов FISHER для контроля своих сложных процессов.

Выше изображены следующие аппараты FISHER, с лева на право: тип № 235 контролер уровня жидкости; тип № 1 — регулятор постоянного давления в насосе; тип ST — аппарат для отделения воды от пара (трап); и тип № 57 — диафрагмовый моторный клапан или регулятор давления.

Полный каталог FISHER, с деталями и техническими данными об автоматических клапанах, высылается по запросу.

Desde el año de 1881, la Fisher Governor Company ha hecho toda clase de esfuerzos en la manufactura de un surtido superior de reguladores automáticos para bombas, reguladores de presión, trampas del vapor, reguladores del nivel en los líquidos, válvulas de palanca, válvulas flotantes, reguladores de gas y otros aparatos semejantes. Los reguladores Fisher se usan extensamente en todos los países del mundo. Para conveniencia de los consumidores, hay un representante oficial de Fisher en la mayor parte de los grandes centros industriales.

Las industrias de la refinación de petróleo y de gasolina natural han recibido grandes beneficios con la regulación de sus complicados procedimientos por el desarrolo científico de las Válvulas Automaticas Fisher.

Los equipos FISHER que se ven arriba de izquierda a derecha, son: Regulador a distancia del nivel de líquidos. Tipo No. 235; Regulador de presión constante para bombas, Tipo No. 1; Trampa de vapor de cubo invertido, Tipo ST; y Válvula de diafragma para motor o regulador de presión, Tipo No. 57.

El catálogo completo FISHER contiene detalles e informes tecnicos de las válvulas automáticas y sera enviado por correo si se pide.

La Fisher Governor Company fait, depuis 1881, tous ses efforts pour produire un assortiment supérieur de régulateurs automatiques pour pompes, régulateurs de pression, séparateurs d'eau de condensation, régulateurs de niveau de liquide, soupapes à levier, soupapes à flotteur, régulateurs de pression de retour, régulateurs de gaz et autres dispositifs similaires. Les dispositifs de réglage FISHER s'emploient en grandes guantités dans tous les pays du monde. Pour la commodité des clients, on trouve dans la plupart des grands centres industriels un représentant officiel de la maison FISHER.

L'industrie pétrolière et celle de la raffinerie de l'essence naturelle ont considérablement profité du perfectionnement scientifique des soupapes automatiques FISHER pour régler leurs procédés complexes d'exploitation.

Les articles FISHER représentés ci-dessus sont, de gauche à droite, les suivants: Régulateur de niveau de liquide à commande à distance de modèle No. 235, Régulateur pour pompe à pression constante de modèle No. 1, Séparateur d'eau de condensation à auget renversé de modèle ST, et Régulateur de pression ou de soupape á diaphragme pour moteur No. 57.

Le catalogue FISHER complet donnant tous les détails concernant ces soupapes automatiques ainsi que tous autres renseignements techniques sera envoyé sur demande.

FISHER GOVERNOR COMPANY

201 South First Ave., MARSHALLTOWN, IOWA, U.S.A.

CRACKING HOLDS WORLD-WIDE INTEREST

Cracking today is the center of interest of the world-wide oil industry, and that interest is more intent than ever before.

Fast-moving world developments and trends are responsible for this increased interest.

Interest in cracking is not new.

Dubbs cracking units—hundreds of them—have been in profitable operation for years, the world over, cracking the widest variety of charging stocks.

But the search for the solution of the insistent problems of petroleum production control and market stabilization has led oil executives of every nation to study the oil business from new angles.

Out of this study has come increased recognition of the value and importance of the cracking process, not only as a means of making gasoline of the best quality but also as a most effective economic force for stabilizing the industry.

Three chief factors today lend added importance to cracking:

1. Leaders in all oil-producing countries are alive to the fact that prosperity of the industry depends on restricting production of crude oil to the quantity that will produce the gasoline needed by the best refining methods.

2. Improvement of automobile engines and demand for their further improvement has brought world-wide demand for gasoline of high anti-knock value.

3. Installation of the cracking process in any country, whether it produces crude oil or not, makes possible the building of an oil industry which gives employment to labor, brings revenue to the government and makes for national security.

В настоящее время крекинг-процесс более чем когда либо является центром внимания мировой нефтяной промышленности.

Этот повышенный интерес об'ясняется быстрым движением мирового прогресса.

Интерес к крекингу не нов.

Сотни крекинговых установок DUBBS работают прибыльно втечение многих лет по всему миру, крекируя самое разнообразное сырье.

В поисках за разрешением насущных проблем регулирования мировой добычи нефти и стабилизации рынка, ответственные нефтеработники всех стран начали изучение нефтяного дела под иным углом зрения.

В результате этого изучения, увеличилось сознание ценности и важности крекингового процесса, не только как способа для получения бензина высшего качества, но также как серьезного экономического фактора для стабилизации нефтяной промышленности.

Следующие три главных фактора в настоящее время еще больше увеличивают значение крекинга:

1. Руководители нефтяной промышленности всех стран, где добывается нефть, признают, что успех этой промышленности зависит от сокращения добычи нефти до того количества, при которой можно получить весь необходимый газолин, применяя наилучшие методы перегонки.

2. Усовершенствования в автомобильных моторах и требования дальнейших улучшений таковых, вызывают мировой спрос на бензин с высокими антидетонирующими свойствами.

3. Постройка крекинг-установок в любой стране, независимо от того, добывается ли там нефть или нет, дает возможность создания нефтеобрабатывающей промышленности; это в свою очередь уменьшит безработицу, увеличит приход казны и укрепит обороноспособность страны.

La destilación completa de los petróleos, "Cracking" es el centro de interés de la industria mundial del petróleo, y ese interés es ahora mayor que nunca. Los desarrollos rápidos y las tendencias actuales son los responsables de ese interés creciente.

El interés en la destilación completa no es nuevo.

Las unidades Dubbs para "Cracking" tienen muchos años de estar en explotación que deja utilidades en centenares de lugares sobre todo el mundo, destilando la más grande variedad de petróleos en existencia.

Pero, la necesidad de buscar solución a los problemas dominantes en la producción de petróleo y la estabilización de los mercados ha conducido a los directores en todas las naciones al estudio de la parte mercantil del petróleo desde nuevos puntos de vista.

De ese estudio ha resultado el reconocimiento creciente del valor e importancia del procedimiento de la destilación completa, no sólo como medio de obtener gasolina de la mejor calidad, sino como el medio más eficaz de estabilizar los mercados.

Actualmente hay tres factores principales que le dan mayor importancia a la destilación completa:

1. Los principales petroleros en los países productores de petroléo comprenden que la prosperidad de la industria depende de la restricción de la producción del petróleo crudo a la cantidad que produzca la gasolina necesaria por los mejores métodos de refinación.

2. Los perfeccionamientos en los motores de los automóviles y la demanda de de nuevos perfeccionamientos ha hecho que aumente la demanda mundial de gasolina de la calidad que evita los golpes de los motores.

3. Las instalaciones del procedimiento de la destilación completa en cualquier país, sea o no productor de petróleos crudos, permite el establecimiento de una industria de petróleo que da trabajo a diversos operarios, cria rentas para los gobiernos y se hace para seguridad nacional.

Le cracking du pétrole est de nos jours l'intérêt central de l'industrie mondiale du pétrole, et cet intérêt est actuellement plus vif qu'il ne l'a jamais été par le passé. Cet intérêt accru s'explique par les développements mondiaux rapides et les tendances nouvelles de l'industrie.

L'intérêt attaché au cracking n'est pas nouveau.

Les appareils Dubbs de cracking—par centaines—fonctionnent sur une base rémunératrice depuis bien des années et dans le monde entier, effectuant le cracking d'une gamme étendue de pétroles les plus divers.

Mais la nécessité de trouver une solution aux problèmes dominants de la production du pétrole et de la stabilisation du marché pétrolifère, a amené les industriels du pétrole de toutes les nations à étudier l'industrie pétrolifère sous des angles nouveaux.

De cette étude, il est résulté qu'on reconnaît de plus en plus la valeur et l'importance du procédé du cracking, non seulement en tant que moyen de préparer de l'essence de qualité très supérieure, mais aussi en tant que force économique des plus influentes pour stabiliser l'industrie.

Trois facteurs principaux donnent aujourd'hui une nouvelle importance au cracking:

1. L'élite des industriels du pétrole dans tous les pays producteurs reconnaissent l'importance du fait que la prospérité de l'industrie pétrolifère dépend de la restriction de la production de pétrole brut à une quantité telle qu'elle donnera, par un raffinage suivant les meilleures méthodes connues, la quantité d'essence faisant l'objet de la demande réelle.

2. Les perfectionnements aux moteurs pour automobiles et la demande incessante de nouveaux perfectionnements ont amené une demande mondiale en essence à grand pouvoir antidétonant.

3. L'installation du procédé du cracking dans un pays qu'il soit ou non producteur de pétrole brut, permet d'y établir une industrie pétrolifère, ce qui crée du travail ouvrier, rapporte au gouvernement et contribue à la sécurité nationale.

UNIVERSAL OIL PRODUCTS COMPANY

CHICAGO, ILLINOIS, U.S.A.

Cable Address: **"DUBBSPRO" BENTLEY CODE.**

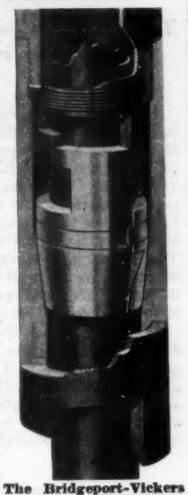
BRIDGEPORT DRILLING AND PRODUCTION EQUIPMENT

The Swan Underreamer (Fig. 1)

The Swan Underreamer (Fig. 1), used by oil men in every producing section of the world for more than 40 years, is only one of the many outstanding, internationally used, products of the Bridgeport Machine Company, Wichita, Kansas, U. S. A.

The Bridgeport-Vickers Releasing and Circulating Rotary Overshot (Fig. 2), for recovering lost drill pipe, is standard equipment with the best operators. This simple and efficient fishing tool, containing only four major parts, is so designed that any desired fluid pressure may be maintained while the tool is in operation, and the Overshot may be released or disengaged at any time after having taken hold. Because of these important features, this Overshot is recognized as the safest and most economical Rotary Fishing Tool obtainable. It contains no rubbers, packing, springs or intricate parts to wear out or cause trouble, making it especially suitable for use in foreign fields. Furnished in any size required.

The tools illustrated here, representative of the complete Bridgeport line, and many other exclusive products and services are described in the "Bridgeport Bulletin," an instructive, semi-monthly publication, mailed free to any address in the world.



The Bridgeport-Vickers Releasing and Circulating Rotary Overshot (Fig. 2)

Расширитель Swan (фиг. 1), который применяется втечение более 40 лет буровыми мастерами во всех странах света, где только имеется нефть, является одним из целого ряда выдающихся, интернационально известных изделий фирмы Bridgeport Machine Company, Wichita, Kansas, U. S. A,

Освобождающий циркуляционный овершат Bridgeport-Vickers для вращательного бурения (фиг. 2), применяется для ловли потерянных бурильных труб, и является стандартным оборудованием опытных буровых мастеров. Этот простой и надежный ловильный инструмент, состоящий всего из четырех основных частей, сконструирован так, что, во время его работы, можно продолжать поддерживать любое желаемое давление грязевого раствора. Кроме того, овершат можно освободить или разъединить в любой момент после того, как он захватил трубы. Ввиду указанных существующих качеств, этот овершат признан наиболее безопасным и наиболее экономным ловильным инструментом для вращательного бурения. В нем нет резины, нет набивки, пружин или сложных частей, подвергающихся износу, или создающих осложнения. Благодаря этому, он особенно пригоден для заграничных промыслов. Этот овершат изготовляется всех требуемых размеров.

Инструменты изображенные здесь, составляющие часть специальности Bridgeport, а также многие другие выдающиеся изделия этой фирмы, описываются в поучительном бюллетене «Bridgeport Bulletin», который выпускается два раза в месяц. Этот бюллетень высылается безплатно по любому местному или заграничному адресу.

Es escariador Swan Underreamer (Fig. 1) empleado por los petroleros, en todas partes del mundo, desde hace más de 40 años, es uno entre los varios productos de internacional fama y universal aplicación, de la Bridgeport Machine Company, Wichita, Kansas, E. U. A.

La rotatoria de disparo y circulación Bridgeport-Vickers, de alimentación por arriba, (Fig. 2) para la recuperación de tubos de sondas perdidos, es equipo normal de los grandes petroleros. Esta sencilla y eficaz herramienta de recuperación, constituída por sólo cuatro piezas principales, funciona bajo cualquiera presión líquida, que se desee, pudiendo dispararse o desconectarse en cualquier momeneto después de su aseguramiento. Debido a estas ventajas, esta herramienta es la más segura y económica de su clase. No contiene piezas de caucho, empaquetaduras, resortes ni piezas delicadas expuestas a desgaste o propensas a provocar irregularidades. Por esta razón es ideal para servicio en el extranjero. Se suministra de cualquier tamaño deseado.

Las dos herramientas aquí ilustradas, lo mismo que otras de gran utilidad, se describen en detalle en el "Boletín Bridgeport," el cual es una revista mensual propia, que se enviará gratuitamente a quien se sirva pedirla.

L'Elargisseur Swan (Fig. 1), employé par les producteurs de pétrole dans le monde entier depuis plus de 40 ans, est un des nombreux produits d'élite, d'un emploi universel, fabriqués par la Bridgeport Machine Company, Wichita, Kansas, E. U. d'A.

Le Repêcheur Bridgeport-Vickers de Dégagement et de Circulation (Fig. 2), qui sert au repêchage de tubes de forage perdus, est l'équipement standard des producteurs de pétrole les plus importants. Cet outtil de repêchage simple et pratique, qui comporte seulement quatre pièces principales, est conçu pour qu'on puisse maintenir toute pression désirée du fluide pendant qu'on s'en sert, et qu'on puisse dégager et sortir le Repêcheur à tout moment après qu'il a saisi l'objet à repêcher. Grâce à ces caractéristiques importantes, ce Repêcheur est reconnu comme le plus sûr et le plus économique Outil de Repêchage Rotatif en existence. Il ne contient ni caoutchoucs, garniture, ressorts ou pièces complipées susceptibles de s'user ou de causer des difficultés, ce qui fait qu'il convient particulièrement à l'emploi dans les champs pétrolifères à l'étranger. Il est fourni dans toutes les grandeurs désirées par la clientèle.

Les outils représentés ici, typifiant les articles de la collection complète Bridgeport, et un grand nombre d'autres produits et services exclusifs de cette maison sont décrits dans le "Bridgeport Bulletin", une publication instructive, semi-mensuelle, envoyée gratuitement dans le monde entier à toute personne en faisant la demande.

THE BRIDGEPORT MACHINE COMPANY
WICHITA, KANSAS, U.S.A.

HOPPER PORTABLE HOISTS AND DRAW WORKS

For more than eighteen years the Hopper Machine Works has been building portable rotary draw works and portable hoists for oil producers in all parts of the world. This equipment, which may be powered by electric motor, gas, gasoline, or Diesel engine, and mounted on a truck or Caterpillar tractor, provides an efficient and economical means of doing all necessary service work on wells up to 10,000-foot depth.

Hopper Hoists may be readily converted to portable rotary draw works by attaching rotary drive and sand reel, thus combining a general servicing and drilling machine in one unit. This equipment has proven most effective for pulling tubing, bailing sand, replacing pumps, fishing jobs, redrilling, deepening, removing liners, temporary cementing jobs, and many other kinds of repair work at the well.

Built in a complete range of types and sizes; easily mounted to a truck or Caterpillar in any field shop. Complete descriptive literature and prices furnished on request.

Фирма Hopper Machine Works втечение более 18-ти лет строит переносные лебедки для промысловых работ и переносные лебедки для вращательного бурения. Эти лебедки применяются по всему миру. Они могут работать при помощи электромоторов, газомоторов, газолиновых мторов или дизель моторов. Установленные на грузовике или гусеничном тракторе, эти лебедки очень продуктивны и экономны для производства всех необходимых работ в скважинах глубиною до 10.000 фут.

Лебедки Hopper могут быть легко переделаны в переносные лебедки для вращательного бурения; для этого на них надо установить передачу для ротора и чистильный барабан. Получается комбинированная лебедка, пригодная для общих целей, а также и для бурения. Такая лебедка показала себя наиболее продуктивной для извлечения насосных труб, вытартывания песков, смены глубоких нососов, ловильных работ, повторного бурения, углубления скважин, извлечения втулок, временных цементировочных работ и для многих других ремонтных работ в буровой.

Эти лебедки строятся разных типов и размеров; в любой промысловой мастерской их можно легко установить на грузовике, или на гусеничном тракторе. Литература с полным описанием и цены высылаются по запросу.

Por más de dieciocho años la Hopper Machine Works ha construído montacargas y máquinas giratorias de tracción portátiles para los productores de petróleo en todas las partes del mundo. Estos equipos que pueden ser accionados por motor eléctrico, de gasolina, de gas o Diésel, y van montados en tractor Caterpillar, suministrán el medio eficiente y económico de efectuar todos los trabajos de los pozos de petróleo hasta de 10.000 pies de profundidad.

Los montacargas Hopper pueden fácilmente convertirse en máquinas giratoraias de tracción portátiles, agregándoles mecanismo giratorio y carrte para las arenas, formandose así en un solo mecanismo una máquina de servicio general para perforaciones. Este equipo ha demostrado eficacia completa halando tubos, sacando arena, reemplazando bombas, pescando herramientas, reperforando, profundizando removiendo tuberías, poniendo cemento temporal y en otros muchos trabajos de reparación en los pozos.

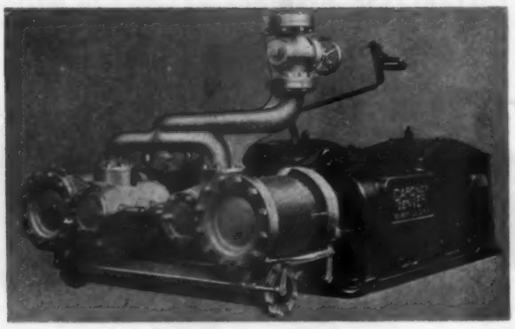
Se construye en diversos tamaños y tipos, se monta fácilmente sobre Caterpillars en el taller. A solicitud suministramos folletos descriptivos y precios.

Depuis plus de dix-huit ans, la Hopper Machine Works fabrique des Treuils de manoeuvre portatifs pour forage rotatif et des Treuils portatifs d'emploi général destinés aux producteurs de pétrole du monde entier. Cet équipement, qui peut être actionné au moyen d'un moteur électrique, au gaz, à l'essence, ou d'un moteur Diesel, et qu'on peut monter sur un camion ou tracteur à chenille, offre un moyen efficace et économique pour accomplir tous les travaux exigés par le forage des puits jusqu'à concurrence de 10.000 pieds de profondeur.

Les Treuils Hopper ordinaires peuvent facilement se convertir en treuils de manoeuvre portatifs en y fixant une commande rotative et une bobine à sable, combinant ainsi une machine d'emploi général avec une foreuse. Cet équipement s'est montré particulièrement efficace pour l'extraction du tubage, l'écopage du sable, le remplacement des pompes, les travaux de repêchage, le reforage, l'approfondissement des puits, l'enlèvement des revêtements, les travaux provisoires des cimentation, et un grand nombre d'autres travaux de réparation des puits.

Il en existe une gamme complète de modèles et de grandeurs variés; ils se montent facilement sur un camion ou tracteur à chenille dans tout atelier à proximité des puits. On peut se procurer des imprimés descriptifs très complets et les prix-courants correspondants sur demande.

HOPPER MACHINE WORKS, Inc.
BAKERSFIELD, CALIFORNIA, U.S.A.
***Cable Address:* "HOPPER"**



Gardner-Denver Drilling Engine

GARDNER-DENVER DRILLING ENGINES, PUMPS, COMPRESSORS

Because of their superior design, sturdy construction and better performance, Gardner-Denver drilling engines, pumps and compressors have won recognition and preference in oil service throughout the world.

There are three sizes of Gardner-Denver Twin Drilling Engines furnished with either slide or piston steam valves, and designed for 250 lbs. and 350 lbs. steam pressure. All engines are totally enclosed, with heavily ribbed frames and unusually heavy cylinders.

Gardner-Denver Steam and Power Pumps are available in a variety of sizes and capacities to meet the requirements of mud pumping, cementing, boiler feed, gathering, and oil line service. Power pumps are furnished with flat or V-belt drive, chain drive, direct drive or top motor mounting.

Gardner-Denver manufactures a wide range of vertical and horizontal compressors, including compressors especially designed for the severe operating conditions of air and gas lift, portable compressors and Diesel engine starting compressors. See our advertisement on page 4.

Паровые машины для бурения, насосы и компрессоры фирмы GARDNER-DENVER, пользуются прекрасной репутацией и им отдают предпочтение на нефтяных промыслах всего мира. Это об'ясняется совершенством и прочностью их конструкции, а также прекрасной службой, которую они дают.

Фирма изготовляет двухцилиндровые буровые машины трех размеров, снабженные плоскими или цилиндрическими золотниками и расчитанные для работы при давлении пара в 250 и 350 ан.-фун. Все паровые машины изготовляются совершенно закрытого типа, с рамами, усиленными тяжелыми ребрами и снабженные цилиндрами необычно тяжелого типа.

Насосы GARDNER-DENVER, как паровые, так и приводные, изготовляются разнообразных размеров и мощностей, соответствующих требованиям для подачи грязевого раствора, цементировки питания котлов, откачки из линий и для нефтепроводов. Приводные насосы изготовляются для плоских или "V"-образных ремней, для цепного привода, непосредственной передачи, или с моторами, установленными наверху.

Фирма GARDNER-DENVER изготовляет чрезвычайно разнообразные вертикальные и горизонтальные компрессоры, включая специальные компрессоры, сконструированные для тяжелых условий работ эр-лифтов и газ-лифтов, также переносные компрессоры и компрессоры для пуска в ход Дизель-моторов. Наше об'явление напечатано на стр. 4 этого журнала.

Debido a la excelencia de su proyecto, firme construcción y mejor funcionamiento, los motores de perforación, bombas y compresoras Gardner-Denver se han granjeado la aceptación y preferencia en todo lugar del mundo donde hay explotaciones petrolíferas.

Hay tres tamaños de motores de perforación gemelos Gardner-Denver, que se suministran con válvulas de vapor correcizas o de émbolo, para presiones de vapor de 250 y 350 libras. Todos los motores están completamente cubiertos y tienen armazón bien reforzada y cilindros de extraordinaria firmeza.

Las bombas de vapor y de fuerza Gardner-Denver se ofrecen en una variedad de tamaños y capacidades, para responder a todos los requisitos de extracción de lodo, cementación, alimentación de caldera, recolección y servicio de línea de petróleo en general. Las bombas mecánicas se suministran con propulsión por cadena plana o triangular en V, propulsión por cadena, propulsión directa c con motor de montaje superior.

La Gardner-Denver construye también un extenso surtido de compresoras verticales y horizontales, incluyendo modelos proyectados especialmente para el difícil trabajo de levantamiento de aire y gas, compresores portátiles y compresoras para el arranque de motores Diésel. Lea nuestro anuncio en la página 4.

Par suite de leur conception bien étudiée, leur solidité et leur rendement, les foreuses, les pompes et les compresseurs Gardner-Denver sont renommés et préférés dans les exploitations pétrolières de tous les pays.

Les foreuses Gardner-Denver à deux cylindres sont construites en trois dimensions avec tiroires ou pistons à vapeur, pour pressions de 250 et 350 livres. Toutes ces machines sont entièrement encloses et comportent de gros bâtis nervurés et des cylindres d'une résistance à toute épreuve.

Les pompes mécaniques et à vapeur Gardner-Denver sont livrées en plusieurs dimensions et débits pour tous services de pompage de boues, application de ciment, alimentation de chaudières, récupération et pipelines. Les pompes à vapeur sont fournies avec commande par courroie plate ou trapézoïdale, par chaine ou par moteur électrique directement accouplé ou monté en dessus.

Gardner-Denver construit une grande diversité de compresseurs verticaux et horizontaux, y compris des compresseurs spécialement étudiés pour des services pénibles tels que l'élévatio nde l'air ou de gaz, des compresseurs portatifs et des compresseurs de démarrage pour moteur Diesel. Voir l'annonce, page 4.

GARDNER-DENVER COMPANY
QUINCY, ILLINOIS, U. S. A.

U. S. PEERLESS ROTARY HOSE

The Original "Bead-Wire" Drilling Hose

Used in every important drilling field in the world, U. S. PEERLESS ROTARY HOSE has been improved and reinforced to withstand an initial test pressure of 4,000 lbs. Combining all the best features of metallic and rubber hose, PEERLESS gives longer service at higher pressures and resists transportation abuse. The double ply of bead wire is embedded in rubber in the wall of the hose—where it cannot get loose and rob the hose of its resistance to pressure. With an initial test pressure of 4,000 lbs., (ample factor of safety for working pressures up to 2,000 lbs.), PEERLESS is the most economical drilling hose for general conditions manufactured today. Furnished with Shaffer high pressure rotary couplings or your own standard couplings.

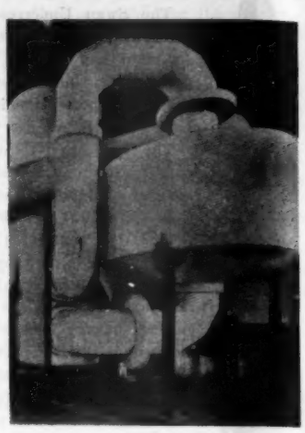
ШЛАНГ ДЛЯ ВРАЩАТЕЛЬНОГО БУРЕНИЯ U. S. PEERLESS, применяемый на всех крупных нефтяных промыслах мира, усовершенствован и усилен с тем, чтобы выдерживать пробное давление в 4000 англо-фунтов. В нем совмещены все наилучшие достоинства металлического и резинового шланга, благодаря чему шланг PEERLESS дает более продолжительный срок службы при более высоком рабочем давлении и хорошо переносит перевозку. Он имеет двойную проволочную обмотку, причем оба ряда обмоток утоплены в резиновой стенке шланга, благодаря чему они не могут ослабнуть и этим уменьшить сопротивляемость шланга давлению. При пробном давлении в 4000 англо-фунтов (что является достаточным запасом прочности для рабочего давления в 2000 фунтов), шланг является наиболее экономным шлангом для вращательного бурения из всех изготовляемых в настоящее время. Эти шланги поставляются с соединительными муфтами фирмы Shaffer, приспособленными для высоких давлений, а также могут быть снабжены и другими соединительными муфтами в соответствии с желанием заказчика.

Utilizada en todos los campos petrolíferos importantes del mundo, la manguera giratoria U. S. PEERLESS ha sido perfeccionada y reforzada para resistir una presión de prueba inicial de 4.000 libras. Combinando todas las mejores ventajas de la manguera metálica y de caucho, la PEERLESS da un servicio más durable a mayores presiones y resiste el rudo trato del transporte. La doble capa de alambre está incrustada en caucho en la pared de la manguera, donde no puede aflojarse y robar a la manguera su resistencia a la presión. Con una presión de prueba inicial de 4.000 libras (amplio factor de seguridad para presiones corrientes hasta de 2.000 libras) la PEERLESS es la manguera de perforación más económica del mercado para responder a las condiciones generales del trabajo. Se suministra con acoplamientos giratorios Shaüer de alta presión o con los acoplamientos normales que se indiquen.

Employé dans tous les chantiers importants de forage du monde, LE TUYAU FLEXIBLE ROTATIF U. S. PEERLESS a été perfectionné et renforcé afin de résister à une pression initiale d'essai de 4.000 lbs. Réunissant les meilleures caractéristiques du tuyau métallique et du tuyau de caoutchouc, le tuyau PEERLESS assure un plus long service aux pressions élevées, et résiste au maniement brutal en cours de transport. Une double épaisseur de fil métallique est enchâssée dans la paroi en caoutchouc du tuyau—où ce fil se trouve emprisonné à demeure, ce qui assure une résistance permanente du tuyau à la pression interne. Ayant été soumis à une pression initiale d'essai de 4.000 lbs. (ce qui assure une ample marge de sécurité pour des pressions d'opération allant jusqu'à 2.000 lbs.), le tuyau PEERLESS est le tuyau de forage pour emploi courant le plus économique qui soit fabriqué à l'heure actuelle. Il est fourni avec des raccords rotatifs de hautes pressions Shaffer, ou vous pouvez y monter vos propres raccords du type standard.

United States Rubber Export Co., Ltd.
1790 Broadway
NEW YORK, U.S.A.

SULFURIC ACID CONTACT PLANT CONSTRUCTION



If your crude oil contains sulfur—or if you can profit by changing to a crude oil which does contain sulfur—you should know that modern processes make it possible to remove that sulfur and convert it into high grade sulfuric acid in a Leonard Construction Company Contact Plant. This experienced Company offers a world wide service that covers every phase of design, construction and operation. Plants are built to fit individual needs. Monsanto Vanadium Catalyst is used exclusively and licensed plants are now successfully operating in all parts of the globe.

Write or cable for booklet.

Если ваши сырая нефть содержит серу, — или если вам выгоднее употреблять нефть с содержанием серы — знайте, что новейшие процессы, достигаемые в контактных установках фирмы LEONARD CONSTRUCTION COMPANY, дают возможность отделить эту серу и переработать ее в высококачественную серную кислоту. Эта фирма обладает большим опытом и предлагает повсеместно свои услуги по детальному проектированию, постройке и пуску в ход установок. Ею строятся заводы, отвечающие индивидуальным запросам. В качестве катализатора применяется исключительно Monsanto ванадий. Заводы, оперирующие по лицензии этой фирмы, работают с успехом во всех частях мира.

Требуйте наши бюллетени письменно или по телеграфу.

Si su petróleo crudo contiene azufre, o si puede beneficiarse mediante el cambio a petróleo crudo que no contenga azufre, le conviene entonces saber que los procedimientos modernos permiten extraer el azufre y convertirlo en ácido sulfúrico de primer orden valiéndose de una planta de contacto de la Leonard Construction Company. Esta compañia de vasta experiencia ofrece un servicio mundial, que comprende todas las fases de proyecto, construcción y operación. Las plantas se construyen para satisfacer requisitos individuales. Se emplea exclusivamente el procedimiento catalizador de vanadio Monsanto. Bajo licencia hay numerosas plantas en lucrativa actividad en todas partes del mundo.

Por carta o por telegrama pídanos información detallada.

Si votre pétrole brut contient du soufre, ou si vous avez avantage à employer du pétrole en contenant, sachez que les procédés modernes permettent d'extraire le soufre et de le transformer en acide sulfurique de qualité supérieure à l'aide d'une installation Contact de la Leonard Construction Company. Cette importante maison offre, en tous pays, des services s'étendant à toutes les phases de l'étude, de la construction et de la mise en marche des usines. Installations étudiées suivant les besoins individuels. Le Catalyseur Monsanto Vanadium est employé exclusivement sous licence dans les usines les plus fameuses de toutes les parties du monde.

Demander le prospectus, par lettre ou par câble.

LEONARD CONSTRUCTION COMPANY
37 South Wabash Avenue,
CHICAGO, ILLINOIS
Cable Address: LEOCONCO, Chicago.

ALLEGHENY TUBULAR PRODUCTS ARE MADE IN OPEN-HEARTH AND COPPER-BEARING STEEL

ALLEGHENY Pipe, Tubing and Casing are available in open-hearth and copper-bearing steel, and for major corrosion applications ALLEGHENY (99.8%) pure-iron copper bearing. Allegheny Pipe is furnished in either standard or special weights, plain ends, square cut or beveled for patented couplings or welded ends, or with clean, sharp, perfectly cut threads and standard or line pipe couplings. All threads are protected with approved thread protectors.

ALLEGHENY Tubular Products meet the specifications of the United States Government, the American Society for Testing Materials, the American Petroleum Institute and any special requirements of the pipe consuming industry.

Immediate shipments of ALLEGHENY Pipe, Tubing and Casing are made from mill or warehouse stocks located at strategic points. Shipments are wire traced through to destination.

Трубы, насосные трубы и обсадные трубы ALLEGHENY изготовляются из мартеновской стали, из стали с содержанием меди, — а для тех мест где имеется опасность разъедания, — из чистого железа ALLEGHENY (99,8 %) с содержанием меди. Трубы ALLEGHENY изготовляются как стандартного, так и специального веса, с гладкими вертикально срезанными концами, и со скошенными концами для патентованных муфт или для сварки; также с чистой, остроконечной, хорошо нарезанной резьбой для стандартных муфт, или для трубопроводных муфт. Все резьбы защищены предохранительными колпаками.

Трубы ALLEGHENY соответствуют правительственным спецификациям Соединенных Штатов, спецификациям Американской Ассоциации по Испытанию Материалов, Американского Нефтяного Института и всем специальным требованиям потребителей труб.

Отправка труб, насосных труб и обсадных труб ALLEGHENY производится немедленно либо с завода, либо со складов, расположенных в главных пунктах потребления. Мы по телеграфу следим за правильностью движения грузов к месту их назначения.

Los conductos, tubería y otras piezas fundidas, de marca Allegheny, se ofrecen de acero Siemens-Martin con contenido de cobre, y para resistir mayor grado de corrosión, de puro hierro con cobre, Allegheny de 99.8%. Los conductos o tubos Allegheny se suministran en pesos corrientes y en pesos especiales, con extremos planos o con extremos a escuadra o biselados, para acoplamientos patentados o con extremos soldados. También se suministran con rosca o filete de corte perfecto y acoplamientos normales de línea conductora. Todas las roscas van protegidas con resguardos adecuados.

Los productos tubulares Allegheny se conforman con las características de los patrones del Gobierno de los Estados Unidos, la Sociedad Americana de Ensayos de Materiales, el Instituto Americano de Petróleo y satisfacen todo requisito especial de los consumidores de tubería.

Los productos Allegheny se embarcan inmediatamente de nuestras fábricas y depósitos situados en puntos estratétigcos. El servicio es siempre rápido y seguro.

Les tuyaux, tubes et pièces fondues ALLEGHENY se fournissent en acier Siemens-Martin et en acier recouvert de cuivre et, pour applications exposées à une forte corrosion, en alliage ALLEGHENY (99,8%) de fer pur à recouvrement de cuivre. Les tuyaux Allegheny se fournissent de poids courant ou spécial, avec extrémités unies, coupées d'équerre ou en biseau pour accouplements brevetés ou extrémités soudées à l'autogène, ou bien avec filetages nets, propres et parfaitement découpés et accouplements courants ou pour tuyaux de conduite. Tous les filetages sont protégés par des dispositifs de protection approuvés.

Les produits tubulaires ALLEGHENY satisfont aux spécifications du Gouvernement des Etas-Unis, de la Société Américaine pour Éprouver les Substances, de l'Institue Américain du Pétrole "A. P. I.", et répondent à tous les besoins des industries faisant usage de tuyaux.

Les expéditions de tuyaux, tubes et pièces fondues ALLEGHENY se font immédiatement de l'usine ou des entrepôts de stock situés à des points stratégique. Les expéditions sont suives télégraphiquement jusqu'à destination.

We would be pleased to hear from interested parties and would appreciate an opportunity to quote on your requirements.

ALLEGHENY STEEL CO.

BRACKENRIDGE, PA., U.S.A.

ELLIOTT CORE DRILLS

Elliott Core Drills are manufactured in two distinct types, for use with both rotary and cable tool drilling equipment. They represent the combined engineering, metallurgical and field experience gained during a period of more than twelve years of direct supervision over core drilling operations and core drill manufacturing procedure.

ELLIOTT MODEL 34 ROTARY CORE DRILL: In operation and recovery of core the new Model 34 is a vastly improved coring tool. It cuts more core, but less formation. Safety factors are better balanced. The improved detachable cutter head is making better and faster recoveries than ever before. The detachable feature permits rebuilding at minimum cost when dulled, and more economical replacement when finally worn beyond repair. Two types of core catchers are available; for average and hard formations. Both the cutter bodies and subs are heat treated in modern automatically controlled furnaces. Cutter heads are faced with Tungstite and subseqquently heat treated to relieve strains induced by welding. Supplied in various sizes for cutting hole from 3⅞" to 27". Write for Bulletin No. 34-R.

ELLIOTT CABLE TOOL CORE DRILL: For years the standard of operating efficiency and core recovery throughout the oil fields of the world. Many cable tool drillers use this tool to drill and core continuously, as it cuts as rapidly as a regular drilling bit. Has successfully cored formations ranging from soft, sticky shale to very hard conglomerate. Correct in design, of extremely precise construction, and absolutely safe in operation. Supplied in sizes for cutting hole from 3¾" to 12", recovering cores from 1¼" to 3". Write for Bulletin No. 34-C.

Грунтоноски ELLIOT изготовляются двух разных типов, а именно: для работы при вращательном бурении, и для работы при канатном бурении. В их конструкцию вложен более чем двенадцатилетний опыт инженеров, металлургов и промысловых экспертов, основанный на непосредственном ведении работ грунтоносками и на изучении заводских процессов их производства.

ГРУНТОНОСКА ELLIOT МОДЕЛЬ 34 ДЛЯ ВРАЩАТЕЛЬНОГО БУРЕНИЯ. Как в смысле работы ею, так и в смысле получения колонок грунтов, новая модель 34 чрезвычайно усовершенствована. Она дает колонку большего диаметра и при этом срезывает меньше грунта. Рабочие части ее лучше отбалансированы. Усовершенствованная с'емная режущая головка дает лучшую и более быструю проходку, чем прежняя. Когда с'емная головка затупится, то она может быть легко снята и заправлена с минимальными затратами, либо заменена новой, если она окончательно сработалась. Задерживатели грунта изготовляются двух типов: для обычных и для твердых грунтов. Как корпуса резцов, так и переводники подвергаются термической обработке в автоматически контролируемых печах новейшего типа. Режущие головки наварены Tungstite'ом (твердый сплав) и после этого термически обработаны для уничтожения напряжений, возникших при наварке. Эти грунтоноски изготовляются разных диаметров для прохождения скважин от 3⅞" до 27". Требуйте бюллетень № 34-R.

ГРУНТОНОСКА ELLIOT ДЛЯ КАНАТНОГО БУРЕНИЯ. Эта грунтоноска втечение многих лет считается на нефтяных промыслах всего мира наиболее совершенной как в смысле продуктивности своей работы, так и по качеству получаемых образцов грунта. Многие буровые мастера при канатном бурении применяют ее как для бурения, так и для извлечения образцов грунта, так как бурение ею идет так же быстро, как и обыкновенным долотом. Эта грунтоноска с успехом работает в разных грунтах, начиная от мягких грунтов, вязких глин и до очень твердых конгламератов. Она отличается совершенством своей конструкции, чрезвычайной точностью изготовления и работает совершенно безопасно. Грунтоноска изготовляется разных размеров для бурения скважин диаметром от 3¾" до 12" и для колонок диаметром от 1¼" до 3". Требуйте наш бюллетень № 34-C.

Las barrenas Elliott para sacar muestras, se fabrican en dos tipos distintos, para uso con equipo de perforación rotatoria y herramienta de cable. Representan la combinación de experiencia en ingeniería, metalurgia y trabajo práctico, obtenida durante un periodo de más de doce años de supervigilancia directa sobre la extracción de muestras con barrenas y procedimientos de fabricación de barrenas para sacar muestras.

BARRENA ELLIOTT PARA SACAR MUESTRAS, MODELO 34 PARA PERFORACION ROTATORIA: En funcionamiento y en recuperación de muestras, el nuevo modelo 34 es una herramienta notablemente perfeccionada. Corta más muestra, pero menos formación. Los factores de seguridad están mejor equilibrados. La perfeccionada cabeza cortante de tipo amovible está obteniendo muestras mejores y con mayor rapidez. El rasgo amovible permite la rehabilitación a un costo mínimo, cuando la herramienta necesita filadura, y un reemplazo económico cuando se desgasta hasta quedar inutilizada por completo. Hay dos tipos de recogedores de muestras, para formaciones corrientes y para formaciones muy duras. Los cuerpos y accesorios de las herramientas cortantes se someten a tratamiento térmico en modernos hornos de regulación automática. Las cabezas de los cortadores llevan revestimiento de Tungstite y a continuación se les somete a tratamiento térmico para librarlas de las tensiones inducidas por la soldadura. Se suministran en varios tamaños, para agujeros de corte de 3⅞" a 27". Pídanos nuestro boletin No. 34-R.

BARRENA ELLIOTT PARA SACAR MUESTRAS, PARA PERFORACION CON CABLE: Durante años, este tipo ha sido la norma de funcionamiento y rendimiento efectivo en los campos petrolíferos de todas partes del mundo. Muchos perforadores con equipos de cable emplean esta herramienta para perforar y sacar muestras continuamente, pues corta con tanta rapidez como un taladro corriente. Con mucho éxito ha sacado muestras de formaciones que varian de esquistos blandos y pegajosos a conglomerados muy duros y tenaces. Correcta en proyecto y de construcción precisa en extremo, esta barrena es absolutamente segura para el trabajo. Se suministra en tamaños para cortar agujeros de 3¾" a 12", produciendo muestras de 1¼" a 3". Pídanos nuestro Boletin No. 34-C.

Les trépans de carottage Elliott sont livrés en deux genres, pour forage rotatif et à percussion. Ils sont le résultat de l'expérience technique, métallurgique et pratique acquise au course de 12 années de spécialisation dans l'emploi et la fabrication d'outils de forage.

TREPAN DE CAROTTAGE ELLIOTT MODELE 34: Cet outil est des plus modernes en ce qui concerne le forage et la récupération de la carotte. Il taille de plus grosses carottes mais moins de formation. Parfaitement équilibré, le porte-lame amovible facilitant l'ouvrage, permet de remplacer la lame quand elle est émoussée et l'outil tout entier quand il est usé. Livré avec deux différents grapins, pour sols moyens et durs. Corps et tige traités dans des fours automatiques. Porte-lames revêtus de Tungstite et traités pour supprimer les tensions produites par la soudure autogène. En différentes dimensions pour puits de 3¾ à 27 opuces. Demander le prospectus No. 34-R.

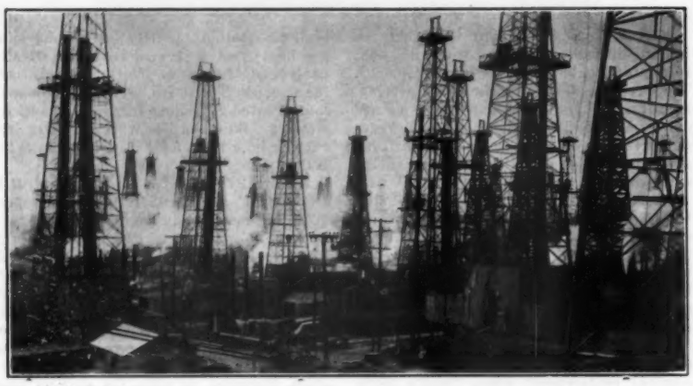
TREPAN DE CAROTTAGE ELLIOTT A PERCUSSION: Adopté depuis de longues années dans tous les gisements pétrolifères du monde entier. Souvent utilisé pour le forage et le carottage continus, du fait de sa rapidité de fonçage. Efficace aussi bien dans les dans les terrains schisteux que dans les conglomérés les plus durs. Parfaitement étudié, extrêmement précis et absolument sûr. Livré en dimensions pour puits de 3¾ à 12 pouces, récupérant des carottes de 1¼ à 3 pouces. Demander le prospectus No. 34-C.

ELLIOTT CORE DRILLING COMPANY

4731 East 52nd. Drive. Los Angeles, California, U.S.A.

Export Office: **525 Graybar Bldg., New York City.**

YOUNGSTOWN



WHEREVER MEN DRILL FOR OIL YOUNGSTOWN PIPE WILL BE FOUND

Out in the fields where wells are drilled or stretching across the country to the centers of consumption, Youngstown steel pipe is serving the oil and gas industries in wells and pipe lines.

Whatever the service, whatever the conditions, the strength and endurance of this fine steel pipe is evidenced by its long life, its ability to stand abuse and its resistance to the corrosive actions of soil, atmosphere and moisture.

Thousands of miles of Youngstown Pipe—in wells and pipe lines—have proved to oil and gas men the world over that Youngstown is a safe investment for every pipe need.

DRILL PIPE—DRIVE PIPE—CASING TUBING—LINE PIPE

Фирма Youngstown поставляет свои стальные трубы как на нефтяные промысла, где производится бурение, так и на поля где укладывается трубопровод.

Как бы не были тяжелы условия работы, прочность и выносливость этих стальных труб сказывается в продолжительном сроке их службы, в их способности выдерживать усилия и их сопротивляемости разъедающему действию почвы, атмосферы и влаги. Тысячи миль труб Youngstown установлены в нефтяных скважинах и в трубопроводах. Это является достаточным доказательством для нефтяников всего мира, что трубы Youngstown пригодны для любых целей.

БУРИЛЬНЫЕ — ЗАБИВНЫЕ — ОБСАДНЫЕ — НАСОСНЫЕ И НЕФТЕПРОВОДНЫЕ ТРУБЫ

Desde los campos petrolíferos donde se perforan pozos y extendiéndose por todo el país hasta los centros de consumo, los tubos de acero Youngstown están sirviendo con tuberías en pozos y oleoductos a las industrias de petróleo y de gas.

Cualquiera que sea el servicio, cualesquiera que sean las condiciones, la fuerza y resistencia de de estos tubos finos de acero está evidenciada por su larga vida, su estabilidad, su resistencia a la acción corrosiva del suelo de la atmósfera y de la humedad.

Millares de millas de tuberías Youngstown—en pozos y en tueberías—han demostrado a los empresarios de gas y petróleo de todo el mundo que es una segura inversión los Youngstown para todas las necesidades de tuberías.

Dans les champs pétrolifères où se forent les puits, et s'étendant à travers le pays jusqu'aux centres de consommation, le tubage d'acier Youngstown sert les industries du pétrole et du gaz, au chantier et pour les canalisations.

Quel que soit le service, quelles que soient les conditions, la solidité et la résistance de ce tube d'acier supérieur ressortent de sa longue durée, de sa capacité de résistance aux usages durs, et du fait qu'il résiste aux actions corrosives du sol, de l'atmosphère et de l'humidité.

Des milliers de kilomètres de Tubage Youngstown—dans les puits et en canalisations—ont prouvé aux industries du pétrole et du gaz dans le monde entier que Youngstown constitue un placement sûr pour la satisfaction de tous besoins en tubage.

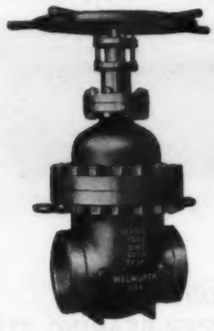
Youngstown Oil Country Tubular Goods are proving their unsurpassed quality in the most severe field service—all the world over.

The YOUNGSTOWN SHEET and TUBE CO.

General Offices - - - - - YOUNGSTOWN, OHIO, U.S.A.

Youngstown's pipe is distributed by

The Continental Supply Co., St. Louis, Mo.—International Supply Co., Tulsa, Oklahoma—Republic Supply Co., E. 7th St., Los Angeles, California.



WALWORTH
Steel Drill Gate Valve

WALWORTH
Steel Valve for Refineries

WALWORTH VALVES AND FITTINGS

The Walworth Company have been manufacturing Valves, Pipe Fittings and Tools for ninety-two years, and have specialized in these products for the Petroleum industry. Walworth products include Drill Gate Valves, Flow Line Valves and corresponding Fittings for oil well hook-ups; also Steel, Iron and Brass Valves and Pipe Fittings for refinery use; as well as Lubricated Plug Valves; and a Pipe Wrench, known as the Walco Pipe Wrench, which is the simplest and strongest pipe wrench made.

The Walworth Company have large manufacturing capacity in five plants; and also have a subsidiary, known as the Walworth International Company, 19 Rector Street, New York City, which handles all foreign transactions exclusively, with Sales Offices in the principal cities in the world.

Фирма Walworth в течение 91 года изготовляет задвижки, трубопроводную арматуру и инструменты, и специализировалась на этих продуктах, применяемых для нужды нефтяной промышленности. Фирма Walworth производит следующие предметы: бурильные задвижки, задвижки для отводных линий и соответствующую им арматуру для контрольных установок на скважинах; кроме того, фирма выпускает стальные, чугунные и медные задвижки и арматуру для нефтеперегонных заводов, в также самосмазывающиеся клапаны с пробкой и ключи для труб, известные под названием Walworth. Эти ключи являются самыми простыми и самыми прочными из всех, имеющихся на рынке. Фирма Walworth имеет пять собственных заводов, а также контролирует фирму Walworth International Company, 19 Rector St., New York City, которая ведает исключительно заграничными поставками и имеет отделения во всех крупных городах мира.

La Walworth Company ha estado fabricando válvulas, avíos para tuberías y herramientas desde hace noventa y un años, y se ha especializado en esos productos para la industria del petróleo. Los productos Walworth incluyen, válvulas de Compuerta para Perforadoras, Válvulas de flujo para tuberías y los avíos correspondientes para conexiones de pozos de petróleo; tambien válvulas de acero, hierro y latón, y avíos de tubos para uso en las refinerías; tambien válvulas de tapón para lubricación; y llaves de tubos, conocidas con el nombre le Llaves Walco para Tubos, que son las llaves más sencillas y fuertes que hay.

La Walworth Company tiene gran capacidad manufacturera en cinco instalaciones y tiene tambien una subsidiaria conocida con el nombre de la Walworth International Company, en el 19 Rector Street, New York City, la que maneja todas las transaciones extrangeras exclusivamente, con Oficina de Ventas en las cuidades principales del mundo.

La Walworth Company fabrique des soupapes, des raccords et garnitures de tuyaux et des outils depuis quatre-vingt-onze ans, et se fait une spécialité de ces articles pour l'industrie pétrolière. Les articles Walworth comprennent des vannes de sondes, des vannes pour conduites de passage et les garnitures correspondantes pour l'agencement des puits de pétrole; ils comprennent aussi des soupapes en acier, en fer et en laiton et des garintures de soupapes pour les raffineries; ainsi que des soupapes de fermeture à graissage et une clé à tube, la clé à tube Walco, la plus simple et la plus robuste qui soit.

La Walworth Company dispose de cinq usines d'une grande capacité de production. Sa filiale, la Walworth International Company, 19 Rector Street, New York, est exclusivement chargée des affaires à l'étranger. La Walworth Company a des bureaux de vente dans les villes principale du monde entier.

Write for catalog which fully describes our complete line of valves.

WALWORTH INTERNATIONAL CO.

19 Rector Street
NEW YORK, N. Y., U.S.A.
Cable Address: **Walintoo**

ACCURATE CONTROL ASSURES MAXIMUM YIELD

Only through accurate process control can refineries operate profitably today. Larger units, higher temperatures and pressures, closer limits, greater flexibility, more complete separation and higher quality of refined products make dependable, uninterrupted control of temperatures, pressures, flows and liquid levels necessary.

The Brown Centralized Control Board shown above typifies a modern installation in an outstanding refinery, and illustrates the use of tower controllers, hot oil flow controllers, flow meters, and recording and indicating potentiometers for oil temperatures.

For suggested applications and catalogs in which they are described, refer to the full-page advertisement which appears in this issue.

The Brown Instrument Company has pioneered many oil refinery applications and hundreds of installations have been made in foreign oil refineries. Our distributors are located in most foreign countries. See partial list below:

Современные нефтеперегонные заводы могут работать с прибылью только при точном контроле процессов производства. Более мощные установки, более высокие температуры и давления, более строгие пределы спецификаций, требуемая гибкость установок, более совершенное отделение и лучшие качества нефтепродуктов, — все это требует непрерывного контроля температур, давлений, количества протекаемых жидкостей и уровней таковых. Центральная контрольная доска BROWN изображенная выше, представляет собою современную установку на хорошем нефтеперегонном заводе. На ней установлены приборы для контроля работы колонн, контроля протекаемого количества горячей нефти и нефтепродуктов, а также и самозаписывающие и обыкновенные потенциометры для указаний температур нефти.

Справки о каталогах, в которых имеется описание этих инструментов, могут быть найдены в нашем объявлении, помещенном на целой странице этого журнала.

Фирма BROWN INSTRUMENT COMPANY является пионером в области снабжения нефтеперегонных заводах. Мы имеем представителей почти во всех странах.

Las refinerías actuales no pueden trabajar teniendo utilidades, sino es con regulación perfecta en sus procedimientos. Grandes unidades, temperaturas y presiones más altas, límites más estrechos, mayor adaptabilidad, separación más completa y más alta calidad de los productos refinados se hacen con confianza, teniendo la regulación sin interrupción de las temperaturas, presiones, corrientes y niveles de los líquidos.

El Tablero Brown de Regulación Central que se ve arriba es típico de una instalación moderna de una refinería notable, e ilustra el uso de los reguladores de torre, reguladores del flujo del petróleo caliente, contadores de corriente de líquidos y potenciometros registradores e indicadores de las temperaturas del petróleo.

La Brown Instrument Company ha sido la iniciadora en muchas refinerías de petróleo de sus aplicaciones, y centenares de instalaciones se han hecho en las rrefinerías de petróleo del extranjero. Nuestros distribuídores se encuentran localizados en la mayor parte de los países extranjeros.

Ce n'est que par un contrôle parfait que les raffineries peuvent, de nos jours, fonctionner sur une base rémunératrice. Des installations plus grandes, des pressions et des températures plus élevées, des limites plus étroites, une plus grande adaptabilité, une séparation plus complète des produits raffinés ainsi qu'une qualité meilleure de ceux-ci dendent nécessaire un contrôle de toute sécurité et continu des températures, des pressions, des courants et des niveaux des liquides.

Le Panneau de Commande Centralisée Brown représenté ci-dessus est le type d'une installation dans une raffinerie de première importance, et fait ressortir l'emploi des tours de contrôle, des régulateurs de la circulation du pétrole chaud, des compteurs de courant, et des potentiomètres enregistreurs et indicateurs pour les températures du pétrole.

En ce qui concerne les applications suggérées et les catalogues où elles se trouvent décrites, se reporter à l'annonce d'une page insérée dans le présent numéro.

La Brown Instrument Company a été un pionnier dans un grand nombre d'applications de raffinerie pétrolifère, et des centaines d'installations ont été faites dans des raffineries pétrolifères à l'étranger. Nous avons des distributeurs dans la plupart des pays étrangers.

We manufacture Pyrometers, Thermometers, Flow Meters, Indicating, Recording and Controling Instruments. Catalogs gladly sent on request.

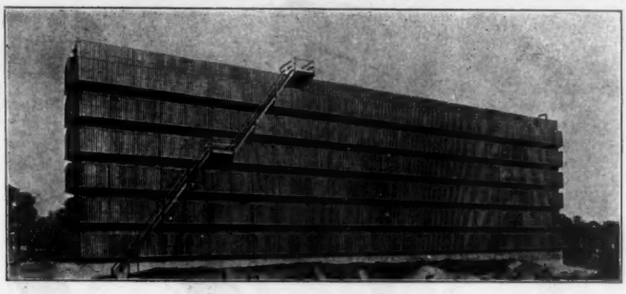
THE BROWN INSTRUMENT COMPANY

Wayne and Roberts Avenues **Philadelphia, Penn., U.S.A.**

Cable Address: "BROWNSON-PHILADELPHIA."

E. C. Knight e Hijo—Buenos Aires. Lec Applications Electro—Brussels. Lovick Johnson Company—London. Societe d'Applications—Paris. Zoetmulder & Van Winkel—The Hague. Henry Cao & Clerici—Milan. Yamatake & Co.—Tokyo. Balkan States Trading—Bucharest.

FLUOR VERTICAL AERATOR COOLING TOWERS



The Fluor Corp., Ltd., established in 1890, has for many years aggressively engineered important changes into the atmospheric cooling tower field and today their structures represent the ultimate in cooling tower construction and efficiency. The goal of the Fluor engineers, which has reached a peak in their Vertical Aerator Cooling Tower, has been (1) to eliminate wind-blown spray, (2) to maintain cooling performance under any and all conditions, (3) to require no more cooling surface or ground space than the old-fashioned towers.

The framework is strong and is rigidly cross-braced. Water distribution is via a longitudinal pipe header with openings in top connecting to long sweep arms in each section. Low pressure non-clogging type system insures even distribution. Staggered cooling decks are of patented convex panel type and the space between two deck strips is covered by one in the lower row so that all water is completely broken up.

All Fluor Aerator Cooling Towers are constructed of California Redwood.

Packed and crated ready for erection. Crates are marked to comply with the custom regulations of the importing country.

Фирма The Fluor Corp., Ltd., основанная в 1890 году, вносит втечение многих лет существенные технические изменения в атмосферные холодильные башни и в настоящее время их сооружения представляют собою последнее слово в смысле конструкции и продуктивности холодильных башен. Целью инженеров фирмы Fluor, каковая цель лучше всего выполнена в их вертикальной охлаждаемой воздухом холодильной башне, — было: (1) избежать рассеивания брызг ветром, (2) поддерживать процесс охлаждения при любых условиях, и (3) не применять большей поверхности охлаждения и большей площадки пола, чем в башнях старого типа.

Каркас башен прочен и надежно укреплен поперечными связями. Распределение воды производится через продольно-расположенную головку с отверстиями в верхней части. К этим отверстиям присоединяются длинные отводы для каждой секции. Вся система работает при низком давлении, она не забивается и при ней обеспечивается равномерное распределение воды. Охладительные платформы сделаны патентованного выгнутого типа, причем промежуток между двумя соседними досками платформы перекрыт доской нижнего ряда с тем, чтобы вся вода протекала.

Все холодильные башни Fluor, охлаждаемые воздухом, построены из настоящего калифорнийского красного дерева. Все связывающие части сделаны из меди, красной меди или гальванизированных металлов.

Эти башни изготовляются всевозможных размеров. В настоящее время в работе имеется более 3000 башен Fluor.

При отправке они упаковываются в клетки, причем каждая отдельная часть имеет маркировку, соответствующую маркировкам на сборочных чертежах. Клетки имеют маркировку, отвечающую таможенным правилам тех стран, куда производится отправка.

La Fluor Corp., Ltd., establecida en 1890, ha venido a la vanguardia en idear y perfeccionar importantes cambios en el campo de las torres de enfriamiento atmosférico. Hoy día, sus construcciones representan la última palabra en eficacia. El programa de trabajo de los ingenieros de la Fluor, que ha culminado con su famosa torre vertical de enfriamiento aéreo, ha sido (1) eliminar el rocío soplado por el viento, (2) conservar el efecto de enfriamiento bajo todas la condiciones y (3) utilizar no más superficie de enfriamiento y no más espacio de piso, que los requeridos por las torres de sistema antiguo.

La armazón es firme, a causa de sus refuerzos transversales. La distribución del agua se efectúa por tubo longitudinal con orificios superiores conectados a largos brazos en cada sección. El sistema de baja presión, inmune a atascamiento, asegura una distribución uniforme. Las cubiertas escalonadas de enfriamiento son de un patentado tipo de panel, con el espacio entre dos cubiertas dispuesto de tal manera que toda el agua queda completamente repartida.

Todas las torres de enfriamiento aéreo de Fluor se hacen de verdadera madera Redwood de California. Toda su ferretería es de latón, cobre o de metal galvanizado.

Estas torres se ofrecen de distintos tamaños. Actualmente hay en servicio más de 3.000 torres Fluor.

Se embalan de modo que se facilite su montaje en le punto de destino. Cada pieza kestá bien marcada, de acuerdo con los planos del caso. Los huacales van marcados y dispuestos de acuerdo con las regulaciones de las aduaae en el extranjero.

La Fluor Corp., Ltd., fondée en 1890, a pendant de nombreuses années apporté d'importants changements dans les tours de refroidissement atmosphériques et, aujorud'hui, ses constructions représentent le dernier mot en ce qui concerne la construction et l'efficacité des tours de refroidissement. Le but poursuivi par les ingénieurs de la Fluor Corporation, but atteint dans l'érection de la tour de refroidissement à aérateur vertical, était (1) d'éliminer l'éclaboussement causé par le vent, (2) d'assurer le refroidissement dans toutes les conditions et (3) de ne pas demander davantage de surface de refroidissement et de ne pas occuper plus d'espace sur le terrain que les tours d'ancien modèle.

La charpente est solide et rigidement entretoisée. La distribution d'eau se fait par un distributeur à conduite longitudinale avec ouvertures, dans la partie supérieure, reliées à de longs bras disposés dans chaque section. Le système de type à basse pression à l'épreuve des engorgements assure une distribution uniforme. Les travées de refroidissement disposées en quinconce sont du type à panneaux convexes et l'espace entre deux bandes d'une travée se trouve couvert par une bande de la travée inférieure ce qui assure la division complète de l'eau.

Toutes les tours de refroidissement à aérateur Fluor sont faites en séquoia de Californie véritable. Toute la quincaillerie est en laiton, en cuivre ou en métal galvanisé.

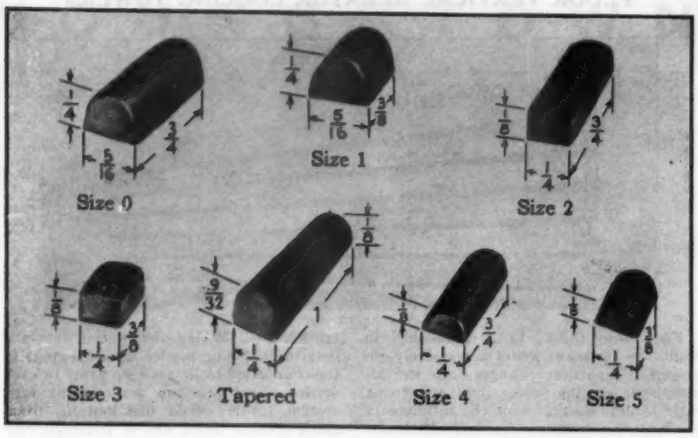
Les tours se font en toutes grandeurs. Plus de 3.000 tours Fluor sont actuellement en service.

Chaque tour, emballée et mise en claire-voie, prête à être montées, est nettement marquée conformément aux plans de montage. Les claires-voies sont marquées selon les réglements de douane des pays où elles sont importées.

THE FLUOR CORP., Ltd.

909 East 59th Street **LOS ANGELES, CALIFORNIA, U.S.A.**

Cable Address: "FLUCONCO"



HAYSTELLITE—THE CAST TUNGSTEN CARBIDE DIAMOND SUBTITUTE

Haystellite is a cast tungsten carbide developed as a diamond substitute for protecting the cutting edges of oil well drilling tools from wear. In the form of small nuggets, Haystellite is available in the six uniform sizes shown above (dimensions are in inches), the number of pieces per pound varying from approximately 36 for Size 0 to approximately 192 for Size 5.

Haystellite is almost as hard as the diamond and is the toughest of all tungsten carbides made for the oil fields. It is tough enough to withstand the most severe impacts encountered at the bottom of the hole without shattering or flaking off and its use has become world-wide, resulting in fast drilling and straight, out-to-gauge hole with long life between round trips.

Haystellite Composite Rod is used as the final coating over the Haystellite nuggets for lengthening the life of the cutting edges of tools. It consists of hard, irregular shaped particles of crushed and screened Haystellite distributed uniformly in a welding rod binder and is available in sixteen different varieties.

Oil well tools protected with Haystellite and Haystellite Composite Rod are daily making drilling records in all types of formations in all the principal oil fields.

Haystellite является литым карбидом вольфрама и употребляется вместо алмазов для предохранения от износа режущих кромок бурильных инструментов. Haystellite в форме небольших кусков изготовляется шести размеров, как указано выше (размеры даны в дюймах). Количество кусочков в одном англофуте варьирует, приблизительно, от 36 для размера 0 до, примерно, 192 для размера 5.

Haystellite почти той же твердости, что и алмаз, и является самым твердым из всех карбидов вольфрама, изготовляемых для нужд нефтяных промыслов. Он достаточно тверд, чтобы выдерживать наиболее жестокие условия работы, встречающиеся на дне скважины, причем он не откалывается и не дробится. Haystellite широко применяется на нефтяных промыслах всего мира, и им достигается более быстрая, прямолинейная проходка и однородный диаметр скважины. Кроме этого, он дает длинный срок службы.

Прутки из композиции Haystellite'a применяются для наварки окончательного слоя поверх кусочков Haystellite'a, чем удлиняется срок службы режущих кромок инструментов. Эти прутки состоят из твердых и неправильной формы кусочков раздробленного и просеянного Haystellite'a, равномерно распределенных в цементе сварочных прутков; они изготовляются в шестнадцати разнообразных вариантах.

Применением бурильных инструментов, снабженных Haystellite'ом и наваренных прутками композиции Haystellite'a, ежедневно достигаются рекордные проходки на всех крупных промыслах и в любых встречающихся грунтах.

Haystellite es un carburo de tungsteno fundido, que sirve de substituto al diamante, para proteger el filo cortante de las herramientas perforadoras de pozos petroliferos, contra el desgaste. En la forma de pepitas se ofrece en los seis tamaños uniformes, que mostramos arriba (con dimensiones en pulgadas). El número de pepitas por libra varia aproximadamente de 36 para el tamaño 0 a cerca de 192 para el tamaño 5.

Haystellite es casi tan duro como el diamante. Es el más resistente de todos los carburos de tungsteno utilizados en los campos petroliferos. Es bastante resistente para aguantar los golpes más severos que se producen al fondo del agujero, sin romperse o descararse. Su aplicación se ha hecho universal, pues produce una rápida perforación, dejando un agujero recto y preciso, con larga duración entre los trabajos de entrada y salida.

La varilla compuesta de Haystellite se emplea como capa final sobre las pepitas Haystellite, para prolongar la duración de los filos cortantes de las herarmientas. Consiste de duras particulas de forma irregular de Haystellite molida y cribada, distribuidas uniformemente en una varilla de soldar, la cual se ofrece en diez y seis diferentes variedades.

Las herramientas para pozos petroliferos protegidas con Haystellite y varilla compuesta de Haystellite están a diario estableciendo nuevos precedentes en perforación en todos los tipos de formaciones o yacimientos en los principales campos petroliferos del mundo.

Le produit Haystellite est un carbure de tungstène fondu, remplaçant le diamant pour éviter l'usure des tranchants de sondes à puits pétrolifères. La Haystellite est livrée sous forme de petits lingots en six dimensions différentes (en pouces), le nombre de morceaux à la livre allant d'environ 36 pour la dimension No. 0 à environ 192 pour le No. 5.

La Haystellite est presque aussi dure que le diamant, c'est le plus tenace de tous les carbures de tungstène offerts pour l'emploi dans les champs pétroliers. Elle résiste aux chocs les plus violents au fond du puits sans se fêler ni s'écailler. Elle permet de forer rapidement et droit, donne un puits au diamètre voulu et dure très longtemps, aussi est-elle aujourd'hui employée dans le monde entier.

Le "Composite" Haystellite en bâtons sert à enduire les lingots de Haystellite, afin que le tranchant des outils dure plus longtemps. Il est constitué par des particules dures et irrégulières de Haystellite broyée et tamisée, uniformément réparties dans un agglomerant à soudure. Livré en seize différentes variétés.

Les outils de forage traités à la Haystellite et au composite Haystellite établissent constamment des records dans les formations de tous genres des principaux gisements pétroliera.

HAYNES STELLITE COMPANY

Unit of Union Carbide and Carbon Corporation

UCC

General Office and Works—Kokomo, Indiana

Foreign Sales Department—New York City

OCECO

TANK FITTINGS

Protect Against Fire and Evaporation

Stop losing money that escapes in the form of vapors when your storage tanks breathe. Control evaporation losses with OCECO Conservation Vent Valves.

Make it impossible for fire to get into your tanks. No gas-tight tank with the breather vent protected by an OCECO Flame Arrestor has ever been lost by fire.

Shown above is the OCECO Vent Unit with the Conservation Valve in combination with the Flame Arrestor.

Write for a catalog illustrating OCECO vent equipment and other tank fittings.

Остановите потерю денег, улетучивающихся в виде паров из ваших резервуаров для хранения нефти и нефтепродуктов. Прекратите эти потери установкой предохранительных вентиляционных клапанов OCECO.

Устраните возможность проникновения огня во внутрь ваших резервуаров. Ни один герметический резервуар, снабженный вентиляционным клапаном и уловителем пламени OCECO, не был до сего времени потерян от пожара.

Выше изображена вентиляционная установка OCECO, состоящая из предохранительного клапана в комбинации с уловителем пламени.

Требуйте каталог OCECO, в котором изображены вентиляционные приспособления и прочая резервуарная арматура.

Cese de perder dinero, que se escapa en la forma de vapores cuando sus tanques de depósito respiran. Evite las pérdidas por evaporación mediante las válvulas de respiración OCECO Conservation.

Haga imposible que el fuego entre a sus tanques de almacenamiento. Hasta ahora, ningún tanque hermético al gas con respiradero protegido por el detenedor de llama OCECO se ha perdido a causa de incendio.

Arriba mostramos el grupo de respiradero OCECO con válvula de respiración Conservación en combinación con el detenedor de llama.

Pídanos catálogo ilustrado de los equipos de respiración OCECO y otros accesorios para tanques.

Evitez les pertes causées par l'échappement de vapeurs des réservoirs. Supprimez l'évaporation à l'aide des Events OCECO.

Ecartez tout danger d'incendie. Aucun réservoir étanche aux gaz, muni d'un pare-flamme OCECO à l'évent n'a jamais pris feu.

Ci-dessus : Event OCECO avec soupape de conservation et pare-flamme.

Demandez le catalogue illustré des appareils OCECO et autres dispositifs pour réservoirs.

THE OIL CONSERVATION ENGINEERING CO.

877 Addison Rd.

CLEVELAND, O., U.S.A.

MAGNETIC INSTRUMENT

Anderson photo-record magnetic single-shot survey instrument provides a means of measuring with the highest degree of accuracy both the inclination and direction of a well at any time and any depth in open hole. It is run into the well on a wire line and a survey reading requires but little longer than to run the bailer.

The measurements of inclination and direction are automatically photographed on metal rimmed sensitized discs which are loaded into the instrument in daylight and developed within four minutes on the derrick floor. No knowledge of photography or mathematics is required. The whole operation is very simple.

The instrument and record discs are shown in our advertisement in this issue.

Магнитный фото-рекордирующий аппарат ANDERSON'a для одиночных снимков является инструментом, при помощи которого можно в любое время и на любой глубине измерить с чрезвычайной точностью как уклон, так и направление уклона скважины. Он спускается в скважину на канате, причем получение и просмотр записи отнимает немного больше времени, чем требуется для спуска желонки.

Размер отклонения и направление автоматически фотографируются на чувствительном диске с металлическим ободом. Эти диски заряжаются в аппарат при дневном свете и проявляются на полу буровой в течение четырех минут. При этом не требуется знаний фотографии или математики. Весь процесс чрезвычайно прост.

Инструмент и диски изображены в нашем об'явлении, напечатанном в этом номере.

El instrumento Anderson para reconocimiento topográfico, por procedimiento fotográfico magnético, representa un medio de medir, con el más alto grado de exactitud, tanto la inclinación como la dirección de un pozo, en cualquier momento y a cualquiera profundidad, por el agujero abierto. Se introduce en el pozo con un cable de alambre y la lectura del reconocimiento no requiere mas tiempo que su descenso.

Las medidas de inclinación y dirección quedan automáticamente fotografiadas sobre discos sensibilizados provistos de bordes metálicos, que se cargan en el instrumento a la luz del dia y se desarrollan dentro de cuatro minutos sobre la misma plataforma del malacate. No hay necesidad de conocimientos de fotografía y matemáticas. Todo el trabajo es sumamente sencillo.

El instrumento y los discos registradores se muestran en nuestro anuncio en el presente número.

L'instrument d'arpentage magnétique Anderson à photos permet de mesurer d'un seul coup et avec précision l'inclinaison et l'orientation des puits de toute profondeur. On le descend à l'aide d'un fil et les degrés peuvent être déterminés en un instant.

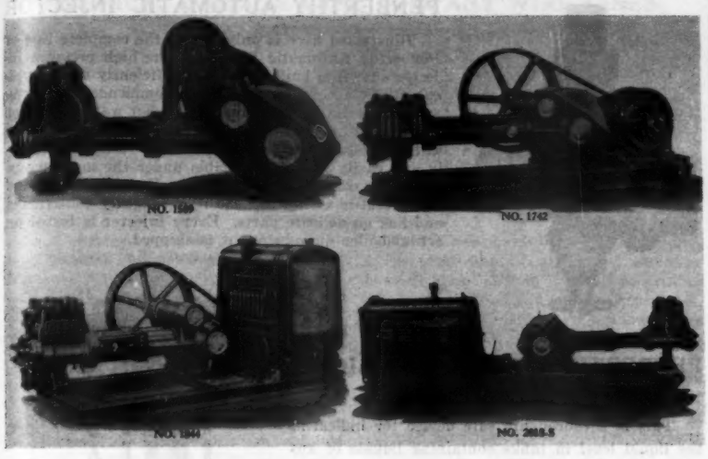
Les mesurages d'inclinaison et d'orientation sont automatiquement photographiés sur des disques sensibles cerclés de métal que l'on place dans l'instrument en plein jour et que l'on révèle en quatre minutes à pied d'oeuvre. Pas besoin de s'y connaitre en photographie ni en mathématiques. L'opération est extrêmement simple.

Cette annonce présente l'instrument et les disques photographiques.

Write For Further Details

ALEXANDER ANDERSON, Inc.

Fullerton, California, U.S.A.



SPECIAL OIL INDUSTRY PUMPS

Gaso Pumps are built exclusively for the oil industry, and thus are designed to exactly meet oil industry requirements. All Gaso Pumps are characterized by few parts and rugged strength. A complete line of pumps for every field, pipe line and refinery equipment, is offered. We also make a complete line of extra rugged pipe line fittings.

Number 1509. All Timken Bearing power pump. Capacities from 63 bbls. per hour at 800 lbs. pressure, to 250 bbls. at 250 lbs. Arranged for any type of drive.

Number 1844. Power Pump unit with combination Gas and Gasoline Engine. Capacities from 50 bbls. per hour at 650 lbs. pressure, to 128 bbls. at 350 lbs.

Number 1742. Power Pump with "V" Rope Drive from Electric Motor. Capacities from 54 bbls. per hour at 1,400 lbs. pressure, to 250 bbls. at 600 lbs.

Number 2018-S. Portable Pumping Plant for emergency, temporary and semi-permanent service. Capacities from 63 to 250 bbls. per hour at 800 to 250 lbs. working pressure.

СПЕЦИАЛЬНЫЕ НАСОСЫ ДЛЯ НЕФТЯНОЙ ИНДУСТРИИ.

Насосы Gaso строятся исключительно для нефтяной индустрии, а потому они спроектированы так, чтобы в точности отвечать требованиям таковой. Все насосы Gaso отличаются малым количеством частей и прочностью конструкции. Фирма изготовляет полный комплект насосов для всех требований промыслов, нефтепроводов и нефтеперегонных заводов, а также и полный комплект экстра-прочной арматуры для нефтепроводов.

Номер 1509. Приводный насос. Все подшипники Timken. Производительность от 63 баррелей в час при давлении в 800 англо-фунтов, до 250 баррелей при 250 англо-фунтах. Эти насосы поставляются для приводов разного типа.

Номер 1844. Приводная насосная установка с комбинированным газовым и газолиновым двигателем. Производительность от 50 баррелей в час при давлении в 650 англо-фунтов, до 128 баррелей при 350 англо-фунтах.

Номер 1742. Приводный насос с приводом от электромотора ремнями формы «V». Производительность от 54 баррелей в час при давлении в 1400 англо-фунтов до 250 баррелей при 600 англо-фунтах.

Номер 2018-S. Переносная насосная станция для срочных непредвиденных случаев, временных и полувременных работ. Производительность от 63 до 250 баррелей при рабочих давлениях от 800 до 250 англо-фунтов.

BOMBAS ESPECIALES PARA LA INDUSTRIA DEL PETROLEO

Las bombas Gaso son construídas para la industria del petróleo exclusivamente, y por eso están diseñadas para satisfacer exactamente las exigencias de esa industria. Todas la bombas Gaso están caracterizadas por tener pocas piezas y resistencia robusta. frecemos un surtido completo de bombas para todos los requisitos de tuberías, refinerías y campos de petróleo. Tamben hacemos un surtido avíos de resistencia extraordinaria para tuberías.

Número 1509. Bomba con todos los cojinetes de rodillos Timken. Capacidades: Para 63 barriles por hora a 800 libras de presión; para 250 barriles a 250 libras de presión. Arregladas para cualquier tipo de motor.

Número 1844. Bomba de Potencia con motor de combinación para Gas y Gasolina. Capacidades desde 50 barriles por hora a 650 libras de presión, hasta para 128 barriles a 350 libras.

Número 1742. Bomba de Potencia con transmisión de cables "V" con motor eléctrico. Capacidades, desde 54 barriles por hora a 1.400 libras de presión, hasta 250 barriles a 600 libras.

Número 2018-S. Instalación de bomba pórtatil para emergencias, de servicio temporal y semipermanente. Capacidades, desde 63 hasta 250 barriles por hora a 800 y 250 libras de presión.

POMPES SPECIALES POUR L'INDUSTRIE PETROLIFERE

Les Pompes Gaso sont construites exclusivement pour l'industrie pétrolifère et répondent par suite parfaitement aux exigences imposées par l'industrie du pétrole. Toutes les Pompes Gaso ont pour caractéristiques dominantes le petit nombre de pièces constituantes et la robustesse de la construction. Nous offrons un assortiment complet de pompes pouvant satisfaire tous besoins d'emploi au chantier, au raffinage et au transport par conduites. Nous fabriquons aussi une collection complète d'accessoires de tubage d'une solidité exceptionnelle.

Numéro 1509. Moto-pompe avec tous les coussinets Timken. Capacités allant de 63 barils par heure à 800 lbs. de pression, à 250 barils une pression de 250 lbs. Adaptable à tous genres de moteurs.

Numéro 1844. Groupe moto-pompe avec moteur combiné pour gaz et pour essence. Capacités allant de 50 barils par heure à 650 lbs. de pression, à 128 barils à une pression de 350 lbs.

Nuhéro 1742. Moto-pompe avec transmission à câbles "V" reliée au moteur électrique. Capacités allant de 54 barils par heure à 1400 lbs. de pression, à 250 barils à une pression de 60 0lbs.

Numéro 2018-S. Groupe portatif de pompe pour service de secours, service temporaire et semi-permanent. Capacités allant de 63 à 250 barils par heure à des pressions de 800 et 250 lbs.

GASO PUMP & BURNER MFG. COMPANY
TULSA, OKLAHOMA, U.S.A.

BANKING HEADQUARTERS IN THE OIL CAPITAL OF THE WORLD

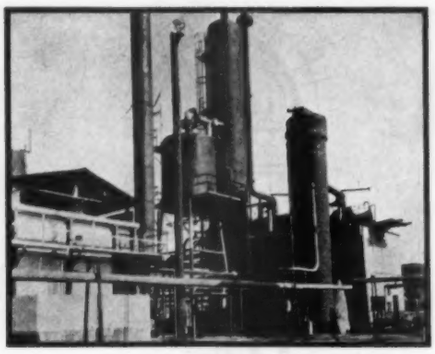
The First National Bank and Trust Company of Tulsa, in the heart of the Mid-Continent oil fields, is thoroughly conversant with every phase of the oil industry, is equipped to render specialized service to patrons in foreign countries. We execute payments, either with or without the delivery of documents, on the order of bank correspondents; we render collection services; issue our own foreign exchange (on behalf of the American Express Company); investigate and furnish credit reports on domestic firms; make settlements for importers and exporters; and through our Trust Department, offer complete fiduciary service, which includes the settling of estates, acquisition, management and disposal of properties. You are invited to make this bank your contact with the petroleum industry in the United States.

Коммерческий банк "First National Bank and Trust Company", находящийся в сердце нефтяных промыслов средних штатов и хорошо знакомый с каждой фазой нефтяной индустрии, предлагает иностранным клиентам свои специальные услуги. Мы производим платежи против предъявления документов или без таковых по распоряжению банков, состоящих нашими корреспондентами; мы коллектируем деньги; выписываем ордера в иностранной валюте (через American Express Co.); производим расследования и даем сведения о кредитоспособности местных фирм; заключаем соглашения для импортеров и экспортеров, а через наш Trust Department мы действуем как Ваши поверенные по вводворению имуществ, приобретению таковых, управлению недвижимостями и по ликвидации их. Вы можете подъзоваться этим банком для создания контакта с нефтяной промышленностью Соединенных Штатов.

El First National Bank and Trust Company, banco comercial, en el corazón de los campos de petróleo del centro del continente, conoce perfectamente todas las fases de la industria del petróleo, está habilitado para prestar servicio especializado a los clientes de los países extrangeros. Hacemos pagos, con entrega o sin entregas de documentos, a la orden de los corresponsales del Banco; hacemos cobranzas; emitimos nuestras propias letras de cambio extrangero (por conducto del American Express Company); investiga y da informes de crédito de firmas del país; hace arreglos entre importadores y exportadores; y por nuestro Departamento Confidencial, ofrecemos servicio fiduciario completo, que incluye, liquidaciones de propiedades, adquisiciones, administración y disposición de propiedades. Invitamos a Ud. a que este banco le sirva de contacto con la industria del petróleo en los Estados Unidos.

La First National Bank and Trust Company, une banque commerciale, au coeur de la région centrale des puits pétrolifères américains, est très versée dans les phases diverses de l'industrie pétrolifère, et est à même de rendre des services spécialisés à ses clients résidant à l'étranger. Nous faisons des paiements, soit sur, soit sans la remise des documents, sur l'ordre de correspondants bancaires; ncus effectuons les recouvrements; nous établissons nous-mêmes nos lettre de change étrangères (pour le compte de la American Express Company); nous faisons conduire des enquêtes et établissons des rapports sur le crédit de maisons nationales; nous effectuons des règlements pour le compte d'importateurs et d'exportateurs; et, par l'entremise de notre Service Confidentiel, nous offrons des services fiduciaires complets, qui comprennent les règlements de propriétés, d'acquisitions, de gérance et de vente de propriétés. Nous vous invitons à utiliser les services de cette banque pour prendre contact avec l'industrie du pétrole des Etats-Unis.

THE FIRST NATIONAL BANK and TRUST COMPANY OF TULSA
TULSA, OKLAHOMA, U.S.A.



EAGLE PRODUCTS FOR OIL AND GAS INDUSTRY

Eagle Insulation: Various types available for complete range of temperatures. Particularly appropriate for oil and gas plants is Eagle "66" Insulating Cement. Extremely efficient up to 1,600° F. Can be applied on any surface by unskilled workmen. Coverage is 50 sq. feet 1 inch thick per 100 lbs.

Eagle Sublimed Blue Lead and Eagle Red Lead: Both excellent materials for protecting metal surfaces against rust. Sublimed Blue Lead is especially recommended because it gives longer protection, costs less.

Eagle Oil Refiners Litharge: Finely ground and is commercially 100% PbO. Completely and quickly soluble in caustic. Generally accepted as the standard quality product for manufacturing Doctor solution.

Eagle White Lead: Reduces painting costs because it lasts longer; also because it wears down smoothly, thus eliminating expensive burning and scraping treatment before new paint can be properly applied.

Изолиция Eagle изготовляется всевозможных типов, пригодных для разнообразных температур. Изоляционный цемент Eagle «66» особенно пригоден для нефтеперегонных и газовых заводов, он весьма стоек при температурах до 1600° Фаренгейта. Неквалифицированный рабочий может покрыть этой изоляцией любую поверхность, причем для поверхности в 50 кв. фут., при толщине в 1" требуется 100 англо-фунтов изолиции.

Высококачественные свинцовые краски Eagle Blue Lead и Eagle Red Lead (сурик) являются прекрасными материалами для предохранения металлов от ржавения. Высококачественный Blue Lead особенно рекомендуется, так как он держится дольше и стоит дешевле.

Глет Eagle для очистки нефтепродуктов поставляется в виде тонкого порошка и представляет собою технически чистый 100% PbO, быстро и вполне растворимый в каустической соде. Этот продукт является стандартным при изготовлении Докторского Раствора.

Eagle White Lead (свинцовые белила) уменьшает расход по окраске, так как последняя держится дольше и изнашивается равномерно. Это сберегает расходы, связанные с выжиганием и с обдиркой старой краски перед новой окраской.

Aislamiento Eagle: Hay varios tipos para cubrir una escala completa de temperaturas. Particularmente bueno para los establecimientos de petróleo y gas es el cemento aislante Eagle "66". Es extremadamente efectivo hasta una temperatura de 1600 grados Fah. Puede aplicarse sobre cualquier superficie por obrero sin experiencia. Su recubrimiento es de 50 pies cuadrados, a una pulgada de espesor, con 100 libras de material.

El plomo azul sublimado Eagle y el plomo rojo Eagle, son ambos materiales excelentes para proteger superficies metálicas contra el moho. El plomo azul sublimado se recomienda en especial, a causa de que dura más y cuesta menos.

Litargirio Eagle para refinadores de petróleo. Este material finamente pulverizado es PbO comercialmente puro. Se disuelve por completo y con rapidez en sosa cáustica. Se acepta universalmente como producto de fina calidad para la preparación de solución Doctor.

Plomo blanco Eagle. Reduce el costo de la pintura, a causa de que dura más, y también, por que se desgasta uniformemente, evitando así el costoso trabajo de derretirlo y alisarlo, antes de aplicar una nueva capa.

Isolants Eagle: Se fournissent en divers genres pour gamme complète de températures. Conviennent spécialement, sous forme de ciment isolant Eagle "66", aux usines à gaz et de pétrole. Très efficace jusqu'à une température de 1.600 degrés, ce ciment peut être appliqué sur n'importe quelle surface par des manoeuvres. On obtient avec ce ciment une couche de 50 pieds carrées et d'un pouce d'épaisseur.

La galène sublimée Eagle et le minium Eagle sont excellents pour protéger contre la rouille. La galène sublimée est recommandée spécialement car elle protège plus longtemps et coûte moins cher.

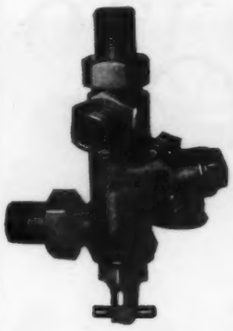
Litharge Eagle pour raffineries de pétrole: Moulue très fine, c'est de l'oxyde de plomb commercialement pur. S'obtient facilement en solution caustique complète. C'est le produit de qualité généralement accepté comme le produit par excellence pour fabrication de la solution dite "Doctor."

Céruse Eagle: Diminue les frais de peinture car elle dure plus longtemps et aussi parce qu'elle s'use uniformément, éliminant la nécessité des brûlages et grattages coûteux avant de pouvoir appliquer convenablement une nouvelle couche de peinture.

THE EAGLE-PICHER LEAD CO.

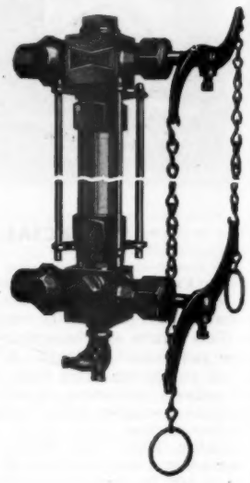
CINCINNATI, OHIO, U. S. A.

PRODUCERS OF LEAD, ZINC AND ALLIED PRODUCTS.



PENBERTHY AUTOMATIC INJECTOR

Illustrated here is only one of the complete line of Penberthy Automatic Injectors; the high pressure injector shown is built to operate efficiently under typical oil field conditions. It is recommended for pressures from 100 to 200 pounds, also hot water and deep suction lift. A Penberthy Injector will supply the feed water to oil field boilers at minimum cost. It is quickly and easily installed, reliable under the most severe operating conditions and requires little attention and no careful handling because it is ruggedly constructed and has no delicate parts. Every injector is tested on actual boiler duty before it is shipped.



PENBERTHY "SAFEGUARD" LIQUID LEVEL GAGE

This is a thoroughly safe device for indicating the liquid level in tanks containing liquids of any kind that do not attack bronze. The construction is very rugged and the gage is recommended for working pressures up to 300 pounds. It is made from high grade steam bronze metal and the workmanship is excellent; all parts are machine finished, buffed and polished. Every gage is tested under pressure and rigidly inspected. The action of the automatic shut-off valves (that prevent loss of tank contents when glass is broken) is instantaneous and positive.

For the other Penberthy Products, see our advertisement in this issue.

Этот совершенно безопасный водомерный прибор служит для указания уровня жидкости в резервуарах, содержащих жидкости не раз'едающие бронзу. Конструкция прибора очень прочна и он рекомендуется для рабочих давлений до 300 англо-фунтов. Он изготовлен из высококачественной прутковой бронзы и великолепно обработан; все части закончены на станках, отшлифованы и отполированы. Каждый прибор испытывается под давлением и проходит строгую инспекцию. На приборе имеется автоматический запорный клапан, который предотвращает потерю жидкости при поломке водомерного стекла. Этот клапан работает мгновенно и надежно.

Обратите внимание на наше об'явление, помещенное в этом журнале, в котором также указаны и другие изделия Penberthy.

Este es un aparato completamente seguro para indicar el nivel de cualquier liquido, que no ataque al bronce, contenido en un tanque. De construcción muy firme. Su indicador está calibrado para acusar presiones efectivas hasta de 300 libras. Se hace de fino bronce con una precisión extraordinaria. Todas sus piezas se labran a máquina, alisan y pulen. Cada indicador se ensaya bajo presión y se examina con sumo cuidado. La acción de las válvulas automáticas (que evitan la salida del liquido del tanque, al romperse el vidrio) es instantánea y positiva.

Para otros productos Penberthy, sírvase ver nuestro anuncio en esta revista.

L'appareil ci-contre est un dispositif de toute sécurité servant à indiquer le niveau du liquide dans les réservoirs contenant les liquides les plus divers qui n'attaquent pas le bronze. La construction en est très robuste et l'indicateur est recommandé pour les pressions ne dépassant pas 300 livre. Il est en bronze de qualité supérieure et l'exécution en est excellente; toutes les pièces de la machine sont finies et polies à fond. Tous les indicateurs sont éprouvés sous pression et soumises à une inpection des plus strictes. Le fonctionnement des soupapes automatiques d'arrêt qui empêchent les déperditions du contenu du réservoir lorsque le verre vient à se briser, est instantané et positif.

En ce qui concerne les autres Produits Penberthy, se reporter à notre annonce dans la présente publication.

На иллюстрации изображен один из автоматических инжекторов Penberthy. Фирма изготовляет комплектный набор таких инжекторов. Изображенный инжектор высокого давления построен для продуктивной работы в обыкновенных промысловых условиях. Он рекомендуется для давлений от 100 до 200 англо-фунтов, также для горячей воды и для под'емов с глубоким засасыванием. Инжектором Penberthy можно подавать питательную воду для промысловых котлов с минимальными расходами. Он легко и быстро устанавливается, работает надежно при самых тяжелых условиях и требует мало внимания и ухода, так как конструкция его очень проста и он не имеет нежных частей. Каждый инжектор, до отправки, испытывается в действительной работе на котле.

Ilustramos aquí sólo uno de los numerosos inyectores automáticos de marca Penberthy. Este modelo de alta presión funciona eficazmente bajo las más exigentes condiciones físicas de los campos petrolíferos. Se recomienda para presiones de 100 a 200 libras, y para levantamiento por succión o aspiración de agua caliente, etc. de gran profundidad. El inyector Penberthy suministra agua de alimentación de caldera, en campos petrolíferos, a un costo mínimo. Se instala con facilidad y rapidez. Seguro bajo las condiciones más exigentes. Requiere poca atención. Fácil manejo, debido a su firme construcción y ausencia de piezas delicadas. Cada inyector se somete a prueba práctica en caldera, antes de salir de la fábrica.

La gravure ci-contre représente seulement un des nombreux Injecteurs Automatiques Penberthy constituant une collection complète; l'injecteur de haute pression représenté est construit de manire à fonctionner efficacement dans des conditions typiques de champ pétrolifère. Il est recommandé pour des pressions de 100 à 200 livres, aussi pour le levage d'eau chaude et pour aspiration en profondeur. Un Injecteur Penberthy pourra fournier l'eau d'alimentation aux chaudières des champs pétrolifères avec un minimum de frais. Il est d'une installation rapide et facile, de tout repos dans les conditions les plus exigeantes d'exploitation et n'exige que peu de surveillance et aucun précaution spéciale dans le maniement grâce à sa construction robuste et au fait qu'il ne comporte aucune pièce délicate. Tous les injecteurs sont soumis à des essais pratiques par mise en service réelle sur chaudière, avant d'être expédiés à la clientèle.

PENBERTHY INJECTOR CO.

Manufacturers of Quality Products since 1886

Detroit, Michigan, U.S.A. **Windsor, Ontario, Canada**

AMERICAN STEEL & WIRE COMPANY WIRE LINES

It is erroneous to say that one certain strength or construction of Wire Line will be satisfactory under all conditions. It can be used under all conditions, but not with the best results. Conditions are varied in different parts of the World, due to the different formations that exist. Some sands are coarse and hard, while others are soft and fine. Drilling tools are light and heavy. Consultation with our experienced engineers will undoubtedly uncover for you methods that will decrease your Wire Line costs. Men with years of technical oil field experience are ready to help you determine the best type of Wire Line for your needs, and the most efficient and economical way to use this important product.

Wire Lines have become a necessity. If properly applied and cared for they have no equal. When it comes to drilling of a well, nothing can replace experience. And—only experience can produce Wire Lines that most efficiently and economically meet every requirement of the driller. It is this background of wire making experience—over 100 years of it—that causes a great majority of operators to turn to American Steel & Wire Company Wire Lines. Whatever you need, ordinary or special, whether it be Cable Tool or Rotary Drilling Lines or for Bailing, Sucker Rods, Tubing, Casing or Pumping Lines—here you will find unequalled quality and helpful engineering service.

Ошибочно думать, что проволочный канат одной и той же крепости и конструкции пригоден для всех условий работы. Его можно применять при разнообразных условиях, но не с наилучшими результатами. В разных странах света, ввиду разнообразности встречающихся формаций, также разнообразны и условия работы каната. Некоторые пески тверды и крупны, в то время как другие — мягки и мелки; бурильные инструменты бывают легкого и тяжелого типа. Наши опытные инженеры несомненно могут указать Вам на методы, которые уменьшат Ваши расходы на проволочные канаты. Люди с долголетним техническим опытом, приобретенным на нефтяных промыслах, готовы притти Вам на помощь и указать Вам какой тип проволочного каната более всего соответствует Вашим потребностям, а также разъяснить Вам наиболее правильный и экономный способ применения этого каната.

Проволочные канаты стали необходимостью. При правильном применении их и уходе за ними, они незаменимы. В вопросе бурения скважины ничто не может заменить опыт. Точно также, — только опыт может создать проволочный канат, который наиболее продуктивно и экономно отвечает всем требованиям бурения. Именно этот, более чем 100-летний опыт по изготовлению канатов, и объясняет то, что большинство буровых мастеров предпочитают работать проволочными канатами American Steel & Wire Company. Каковы бы ни были Ваши требования, обычные или специальные, будь то канат для вращательного бурения, или для тартания, для насосных штанг или насосных труб, для обсадных труб или канат для откачки — у нас Вы найдете наилучшее качество и техническую помощь наших инженеров.

Es un error decir que cierta resistencia o construcción de cable de alambre es satisfactoria en todas las condiciones. Podrá usarse en todas las condiciones, pero no con los mismos buenos resultados. Las condiciones son muy diferente en las diversas partes del mundo a causa de las distintas formaciones existentes. Algunas arenas son gruesas y duras, en cambio otras son finas y suaves. Las herramientas perforadoras son ligeras o pesadas. Consultando a nuestros ingenieros experimentados, indudablemente le descubrirán a Ud. métodos que harán disminuir el costo de sus cables de alambre. Hombres con muchos años de experiencia en la técnica del petróleo están listos para ayudar a Ud. a determinar el mejor tipo de Cable de Alambre, para sus necesidades y el medio más eficiente y económico de usar ese producto tan importante.

Los cables de alambre han llegado a ser una necesidad. Si se aplica y se cuidan propiamente no tienen igual. Cuando se trata de perforar un pozo, nada puede reemplazar la experiencia. Y solo la experiencia puede producir Alambre que satisfaga con más eficacia y economía todas las exigencias del perforador. Este fondo de experiencia—de más de 100 años —que hace que la mayoría de los perforadores vuelva al Alambre de la American Steel & Wire Company, Cualquiera que Ud. necesite, ordinario o especial, ya sea para herramienta perforadora giratoria, cucharas, varillas de aspiración, tuberías o tuberías para bombas—aquí encontrará Ud. servicio de ingeniería de calidad sin igual y del tipo más útil.

Il est erroné de dire qu'une ligne de fil d'une certaine solidité ou d'une certaine construction peut donner satisfaction dans toutes les conditions. On peut, en effet, l'employer dans toutes les conditions, mais sans obtenir toujours les meilleurs résultats. Les conditions d'emploi varient dans les différentes parties du monde, suivant les formations différentes en existence. Certains sables sont grossiers et durs, tandis que d'autres sont doux et fins. Les instruments de forage sont légers ou lourds. En consultant nos ingénieurs spécialement entrainés, vous pourrez mettre au point des méthodes qui vous permettront d'abaisser le prix de revient de vos Lignes de Fil. Ces ingénieurs, qui ont une expérience technique d'exploitation pétrolifère remontant à de nombreuses années, sont à votre disposition pour vous aider à déterminer le type de Ligne de Fil répondant le mieux à vos besoins, et pour vous indiquer la manière d'emploi la plus efficace et la plus économique de ce produit essentiel.

Les Lignes de Fil sont devenues une nécessité. Si on les emploie et qu'on les entretienne convenablement, elles n'ont pas leur égal. Quand il s'agit d'effectuer un forage de puits pétrolifère, rien ne peut remplacer l'expérience. De même, l'expérience seule peut produire des Lignes de Fil qui sont capables de donner satisfaction à toute exigence du forage d'une manière efficiente et économique. C'est cette base d'expérience dans la fabrication des fils—qui remonte plus de 100 ans—qui explique pourquoi une très forte majorité d'entrepreneurs de forage pétrolifère en viennent à adopter les Lignes de Fil de la American Steel & Wire Company. Quels que soient vos besoins, courants ou spéciaux, qu'il s'agisse de Lignes d'Outils à câbles, ou de Forage Rotatif, ou pour l'épuisement des sondes, ou de lignes pour tiges d'aspiration, pour tubage d'exploitation ou d'isolement ou pour le pompage—auprès de cette compagnie, vous trouverez une qualité insurpassée de fil et un service technique des plus précieux.

Write For Special Catalogue.

AMERICAN STEEL & WIRE COMPANY

208 So. LaSalle Street CHICAGO, ILLINOIS, U.S.A.

Export Distributors: **United States Steel Products Co., New York, N. Y., U.S.A.**

Main Office and Plant of Hughes Tool Co., Houston, Texas, U. S. A.

MANUFACTURERS OF SPECIALIZED OIL INDUSTRY TOOLS

TRADE-MARK

Rock Bits—Core Bits—Tool Joints—Drilling Valves—Reamers—Tubing Heads—Milling Tools, etc.

TRADE-MARK

The Hughes Trade-Mark on your Drilling Tools is your assurance of Safety, Dependability and better Performance. If the Trade-Mark could speak to you, it would say:

"I stand for that which is fine in specialized oil field tools. I represent the results of more than two decades of study, development, research and experience in laboratory, shop and field. Throughout the years to come I shall continue to represent that which is best in oil field drilling tools. I never appear on any tool until laboratory and field tests have proven it the best of its kind.

"Through the years, fat years and lean, my high standards have not been lowered. I have helped to save the Oil Industry millions of dollars in the ceaseless quest for oil. I represent increased efficiency and effectiveness of rotary drilling, safety and dependability in well control equipment."

Prove these statements to your own advantage by using Hughes Tools.

Клеймо Hughes на бурильных инструментах гарантирует Вам безопасность, надежность и продуктивность работы. Если бы это клеймо могло говорить то оно сказало бы Вам следующее:

«Мною отмечается все лучшее, имеющееся среди специальных инструментов для нефтяных промыслов. Я представляю собою результат изучений, усовершенствований, исследований и опытов как заводских, так и промысловых, производимых втечение более 20-ти лет. И в грядущие годы я буду олицетворять все лучшее, что имеется среди бурильных инструментов. Я никогда не буду проставлено ни на одном инструменте, пока лабораторные исследования и испытания на промыслах не докажут, что инструмент этот является наилучшим в своем роде».

«Из года в год, как во дни благосостояния, так и во дни депрессии, мой стандарт всегда стоял на должной высоте. Благодаря моей помощи, нефтяная индустрия, в ее непрерывных поисках нефти, сэкономила миллионы долларов. Я гарантирую собою повышенную производительность и эффективность вращательного бурения, а также безопасность и надежность оборудования, применяемого для контроля скважин».

Проверьте это заявление для своей же пользы применением инструментов Hughes.

La marca comercial Hughes en las herramientas perforadoras es la certeza de Seguridad, Confianza y Mejor funcionamiento. Si la marca comercial pudiera hablar a Ud. le diría:

"Hago frente a lo que es fino en herramientas especiales para campos de petróleo. Represento el resultado de más de dos décadas de estudio, perfeccionamientos, investigaciones y experiencias de laboratorio, taller y en el campo. Durante todos los años venideros continuaré representando lo que es mejor en herramientas perforadoras para campos de petróleo. Nunca me presento en una herramienta hasta que en el campo y en el laboratorio he demostrado que es lo mejor de su clase.

"En el transcurso de los años, prósperos y de depresión, mis altas normas no han desmerecido. He ayudado a que la industria del petróleo ahorre millares de dolares en la busca innecesaria de petóleo. Represento aumento en la eficacia y efecto de la perfección rotatoria, regularidad y confianza en los equipos para pozos."

La marque de fabrique Hughes gravée sur vos Outils de Forage est pour vous une garantie de sécurité, de qualité et de meilleur rendement. Si cette marque de fabrique pouvait vous parler, elle vous dirait:

"Je représente la qualité supérieure parmi les outils spécialisés d'exploitation pétrolifère. Je suis le résultat de plus de deux décades de recherche, d'étude, de mise au point et d'expérience réalisées au laboratoire, à l'usine et au chantier. Dans les années à venir, je vais continuer de représenter ce qu'il y a de mieux en outils de forage de champs pétrolifères. Je ne suis jamais gravé sur un outil à moins que des essais de laboratoire ou de chantier n'aient prouvé qu'il mérite d'être considéré comme le meilleur instrument de son genre.

"Au cours des années passées, autant années prasses qu'années maigres, mon standard élevé n'a jamais été abaissé. J'ai contribué à épargner à l'Industrie Pétrolifère des millions de dollars dans la recherche continue de champs pétroliers nouveaux. Je représente une efficience accrue et une efficacité supérieure du forage rotatif; je représente encore la sécurité et la qualité pour l'équipement de contrôle des puits."

Persuadez-vous de la stricte exactitude de ces prétentions, dans votre intérêt même, en faisant usage des Outils Hughes.

HUGHES TOOL COMPANY

Main Office and Plant:

HOUSTON, TEXAS, U.S.A.

CRACKING PLANTS

Refineries operating under the broad license agreement of Gasoline Products Company, are exceptionally well equipped to meet the varying market conditions of the petroleum industry.

In designs for new equipment and for the modernizing of existing cracking units, there is available through the M. W. Kellogg Company, licensing agents of Gasoline Products Company, an exceptional service.

Through this service, refiners secure the benefits of the extensive research and development in cracking conducted by the organizations of several large refiners, plus the research division of Gasoline Products Company, which seeks to provide, continuously in the laboratory effective data applicable to the many problems of the petroleum industry. Apparatus is devised and operated not only from the standpoint of test tubes and work bench, but including actual cracking plants in miniature.

Refineries operating under a license from Gasoline Products Company are assured of equipment possessing sufficient flexibility, to meet the demands and specifications of those products which are the most profitable to produce.

Нефтеперегонные заводы, работающие по лицензионным договорам Gasoline Products Company, обладают исключительными возможностями приспособления к изменяющимся рыночным условиям нефтяной промышленности.

При проектировании нового оборудования или при переустройстве существующих крекинг-установок, фирма M. W. Kellogg Co., которая является лицензионным агентом Gasoline Products Company предоставляет в распоряжение клиентуры опыт исключительной организации.

Благодаря этому, нефтеперегонные заводы могут использовать все достижения обширных опытов и изысканий по крекинг-процессу, которые ведутся крупнейшими заводами, а также могут использовать и результаты работ изыскательского отдела Gasoline Products Company, целью которого является получение в лаборатории данных для разрешения многих проблем нефтепромышленности.

Данные для проектирования проверяются не только с точки врения реакций в пробирках на лабораторном столе, но также и в крекинг-установках лабораторного типа.

Нефтеперегонные заводы, работающие по лицензиям Gasoline Products Company, могут быть уверены в том, что они имеют оборудование, работающее с достаточной гибкостью, чтобы выполнить требования и спецификации, предъявляемые к наиболее рентабельным продуктам.

Las refinerías que trabajan bajo la amplia licencia y acuerdo de la Gasoline Products Company están excepcionalmente equipadas para satisfacer las diversas condiciones del mercado de la industria del petróleo.

Al diseñar nuevos equipos y para modernizar las unidades destiladoras existentes se pueden tener los servicios de la M. W. Kellogg Company, agentes autorizados de la Gasoline Products Company.

Gracias a estos servicios los refinadores aprovechan los desarrollos e investigaciones extensas en destilación completa conducida por las organizaciones de diversas grandes refinerías, más la experiencia de la división de investigaciones de la Gasoline Products Company quien busaca continuamente suministrar datos de laboratorio aplicables a los diversos problemas de la industria del petróleo. Los aparatos son diseñados y accionados no solo desde el punto de vista experimental en tubos y mesas de trabajo, sino en instalaciones verdaderas en miniatura de destilación completa.

Las refinerías que trabajan bajo la licencia de la Gasoline Products Company tienen la seguridad de poseer equipos con suficiente adaptabilidad para satisfacer las demandas y especificaciones de los productos en los que se tienen mayores utilidades.

Les raffineries qui fonctionnent suivant le contrat libéral de licence de la Gasoline Products Company, sont exceptionnellement bien équippées pour satisfaire les conditions variées du marché de l'industrie pétrolifère.

Pour étudier des équipements nouveaux et moderniser les groupes existants de cracking, on peut disposer des services de la M. W. Kellogg Company, agents autorisés de la Gasoline Products Company.

Grâce à ce service, les raffineurs sont à même de bénéficier des recherches extensives et des progrès réalisés en cracking par les organisations de diverses raffineries importantes, ainsi que de ceux réalisés par le service des recherches de la Gasoline Products Company, qui cherche continuellement au laboratoire, á fournir des données pratiques applicables aux nombreux problèmes de l'industrie pétrolifère. Les appareils sont construits et actionnés, non seulement d'un point de vue expérimental en tubes à essai et sur établi de travail, mais comprennent de véritables installations de cracking en miniature.

Les raffineries qui fonctionnent en vertu d'une licence de la Gasoline Products Company, ont l'assurance de disposer d'un équipement possédant une adaptabilite suffisante pour satisfaire les exigences et spécifications imposées par les produits dont la production est la plus rémunératrice.

GASOLINE PRODUCTS CO.
Incorporated
11 Commerce Street NEWARK, N. J., U.S.A.
Cable: LICENCO"

THE SIEVERS REAMER

Operators have proved conclusively that the combination of a SIEVERS REAMER behind the drilling and coring bits results in—

1. Straighter Hole.
2. Increased Drilling Speed.
3. Better Core Recovery.
4. Closer allowable tolerances between the hole and casing.
5. Decreased wear on drilling equipment.
6. AND ABOVE ALL: Decreased Operating Costs with greater safety.

SIEVERS REAMERS are reliably used for—

Reaming
Bit and Core Barrel Stabilization
Hole Conditioing
Hole Straightening
Hole Enlarging
Casing Swedges

Буровые мастера окончательно уоедились в том, что при комбинации римера SIEVERS, установленного за бурильным долотом или за долотом грунтоноски получаются:

1. Более прямая скважина.
2. Увеличенная скорость бурения.
3. Лучшие образцы геологических пород.
4. Меньший допускаемый зазор между стенками скважины и обсадными трубами.
5. Уменьшение износа бурового оборудования.
6. Кроме всего этого: уменьшаются расходы по бурению и увеличивается безопасность.

РИМЕРЫ SIEVERS применяются с успехом для: —

Работ по расширению скважин;
Плавной работы бурильного долота и грунтоноски;
Исправления скважины;
Выпрямления скважины;
Увеличения диаметра скважины,
Выправления обсадных труб.

La experiencia práctica de los mismos dueños ha demostrado que la utilización de un escariador Sievers, a continuación de la perforación con taladro o barrena, produce los excelentes resultados siguientes:

1. Agujero más recto.
2. Mayor velocidad de perforación.
3. Mejor recuperación de núcleo.
4. Tolerancias más aproximadas entre el agujero y el forro.
5. Menor desgaste del equipo de perforación.
6. Y, SOBRE TODO, menor costo de funcionamiento, con mucho mayor seguridad.

Los escariadores Sievers son también muy útiles para lo siguiente:

Escariación.
Estabilización de cilindros de taladros.
Acondicionamiento de agujeros.
Rectificación de agujeros.
Agrandamiento de agujeros.
Matrices de funda.

Les sondeurs ont constaté sans contredit que la combinaison d'un élargisseur Sievers derrière les trèpans de forage et de carottage permet d'obtenir les résultats suivants:

1. Un trou plus rectiligne.
2. Une vitesse de forage plus grande.
3. Une extraction meilleure de carotte.
4. Des jeux réduits entre les parois du trou et le couvelage, plus près des tolérances théoriques.
5. Diminution de l'usure de l'équipement de forage.
6. ET SURTOUT: Opération plus économique avec une sécurité plus grande.

On emploie les ELARGISSEURS SIEVERS en toute confiance pour efectuer:

un alésage
une stabilisation de trépan et de barillet de carottage
un conditionnement du trou de sondage
un redressement du trou
un élargissement du trou
des étampes de cuvelage

Write for catalog

SECURITY ENGINEERING CO.
WHITTIER, CALIF., U.S.A.

ONE OF 40 TYPES OF C-F PRESSURE REGULATORS

On pressure regulators for gas, steam, vapors and various liquids, the letters "C-F" are familiar to three continents. Since the Chaplin-Fulton Manufacturing Company was established more than forty years ago, the name Chaplin-Fulton has always represented the most advanced and most careful designing and the most unstinting devotion of materials and workmanship to the manufacture of dependable regulators. The high pressure regulator illustrated above is shown merely as one representative of a very extensive line, comprising many types and a great range of sizes and capacities. For high and low pressures and for all the varying needs of control under different circumstances of use, there are specially adapted, thoroughly approved Chaplin-Fulton units, concerning which full information will be mailed on request.

Регуляторы давления для газа, водяного пара, паров и разных жидкостей марки «C-F» известны на трех материках. Фирма Chaplin-Fulton Manufacturing Company основана более сорока лет тому назад. Изделия этой фирмы всегда отличались и отличаются современной и продуманной конструкцией, чрезвычайно высоким качеством материалов и тщательностью обработки, каковые необходимы для получения надежных результатов. Регулятор высокого давления, изображенный выше, является одним из многих типов, выпускаемых нами. Каждый тип регулятора изготовляется разных размеров и разных мощностей. Регуляторы Chaplin Fulton пригодны для высоких и низких давлений и для самых разнообразных целей контроля этих давлений при различных условиях работы. Полные сведения об этих регуляторах высылаются по запросу.

En los reguladores de presión para gas, vapor de agua, vapores y diversos líquidos, las letras "C-F" son familiares en tres continentes. Desde que la Chaplin-Fulton Manufacturing Company se estableció desde hace 40 años, el nombre Chaplin-Fulton siempre ha representado los diseños más adelantados y cuidadosamente hechos, así como la devoción más ilimitada de materiales y mano de obra en la manufactura de reguladores de plena confianza. El regulador de alta presión que se ve arriba es sencillamente uno de los representantes de un surtido extenso, que comprende diversos tipos y gran variedad de tamños y capacidades. Para altas presiones así como para bajas presiones y para todo lo que pueda ser necesario en el dominio de las presiones en diversas circunstancias de trabajo, hay unidades Chaplin-Fulton adaptables especialmente y perfectamente aprobadas, sobre las que enviaremos por correo informes completos si se nos piden.

Sur les régulateurs de pression pour gaz, vapeur d'eau, vapeurs et divers liquides, les lettres "C-F" sont bien connues dans trois continents. Depuis l'établissement de la Chaplin-Fulton Manufacturing Company qui remonte à quarante ans, la marque Chaplin-Fulton n'a pas cessé de représenter les modèles les plus progressifs et les plus soignés, ainsi que la mise en jeu sans retenue des meilleurs matériaux et de l'exécution la plus méticuleuse dans la fabrication de régulateurs de tout repos. Le régulateur à haute pression représenté ci-dessus n'est reproduit qu'à titre d'exemple, car il ne s'agit là que l'un des nombreux appareils d'un assortiment très complet comprenant des types très variés et une gamme étendue de grandeurs et de capacités. Pour les pressions élevées ainsi que pour les pressions peu élevées, et pour satisfaire aux divers besoins de contrôle correspondant aux conditions variées d'emploi, il existe des groupes Chaplin-Fulton d'une excellence reconnue et spécialement adaptés à ces fins, sur lesquels on peut se procurer tous renseignements utiles sur demande.

We manufacture a complete line of pressure regulators for gas, steam, vapors and liquids of all kinds and we will be pleased to send literature on our complete line if requested.

CF

CHAPLIN-FULTON MANUFACTURING COMPANY

28-40 PENN AVENUE - - - PITTSBURGH, PA., U.S.A.

LUFKIN PUMPING UNITS

The first Lufkin geared unit for the production of oil was installed in a Gulf Coast field in 1924. This was the first reduction geared unit to ever successfully operate in deep production. Since that time Lufkin Units have been installed in every major oil field of the world and today is considered standard equipment by over one hundred and twenty-five major and minor oil companies operating in domestic and foreign fields. So completely has the LUFKIN GEARED UNIT revolutionized the method of pumping oil wells, that it is now conceded, by Engineers high in the industry, that where sucker rods and working barrels are used, Geared Units are the modern accepted medium by which power is transferred from the prime mover to the polish rod.

Lufkin Geared Units are of two types, namely: Herringbone Gear and worm gear and manufactured in sizes to suit any field from very shallow production to the world's deepest wells. Central Geared Powers are available from 50 to 150 H.P. in both worm and Herringbone geared types.

Auxiliary equipment such as Hoists, Beams, Posts, Pitmans, Hold-Ups, Hold-Downs, Knock-out Posts, Swings, Rod Line Carriers and Jacks—all of improved design are a part of the complete line of Lufkin Production Equipment.

Первая одиночная качалка LUFKIN для откачки нефти, работающая передаточными шестернями была установлена на промыслах Gulf Coast в 1924 году. Это была первая установка с редукционными шестернями, которая работала с успехом при глубокой откачке. С тех пор одиночные качалки LUFKIN применяются на всех крупных промыслах всего мира. В настоящее время более ста двадцати пяти крупных и мелких нефтепромышленных фирм, работающих здесь и заграницей, считают эти установки стандартными. ОДИНОЧНЫЕ КАЧАЛКИ LUFKIN с ШЕСТЕРНЯМИ настолько революционизировали методы откачки нефти, что известные инженеры нефтяной промышленности считают, что там, где работают насосные штанги и глубокие насосы, необходимо иметь одиночные качалки с редукционными передаточными шестернями, которые служат как мидиум передачи энергии от двигателя к полированной штанге насоса.

Фирма LUFKIN строит одиночные приводные качалки двух типов, а именно: с елочными шестернями и с червячными шестернями, причем она изготовляет их разных размеров, пригодных для очень неглубоких и для самых глубоких скважин мира. Центральные приводы с передаточными шестернями строятся мощностью от 50 до 15 лошадиных сил, как с елочными, так и с червячными шестернями.

Фирма LUFKIN также строит следующее дополнительное насосное оборудование усовершенствованной конструкции: лебедки, балансиры, стойки, шатуны, верхние упоры, нижние упоры, ударные стойки, шарнирные соединения, поддержки для насосных тяг и натяжки для насосных тяг.

El primer mecanismo LUFKIN para la producción de petróleo fué instalado en un campo petrólifero de la costa del Golfo en el año de 1924. Esta fué la primera máquina de engranajes de reducción que nunca, hasta entonces había trabajado co éxito en la producción profunda. Desde entonces, las máquipas LUFKIN han sido instaladas en en la mayor parte de los campos petrolíferos del mundo y en la actualidad se consideran como equipo normal en más de ciento veinticinco compañías petroleras grandes y pequeñas, trabajando en el país y en el extranjero. Las máquinas LUFKIN han revolucionado tan completamente el método de extraer con bomba el petróleo, que en la nages sont le mécanisme accepté de nos jours pour effectuer le transfert d'énergie actualidad, ingenieros prominentes en la industria conceden que en donde se usan varillas de aspiración y cucharas de acción, las máquinas de engranajes son el medio aceptado por el cual se transmite del motor a la varilla pulidora.

Los mecanismos LUFKIN son de dos tipos: Con engranajes del tipo de espina de pez y de engranaje de tornillo sin fin, y se fabrican de los tamaños propios para la producción en pozos poco profundos hasta los pozos más profundos del mundo. Hay disponibles motores de engranajes centrales desde 50 hasta 150 caballos, en ambos tipos, los de engranajes de espinazo de pez y los de tornillo sin fin. de la machine motrice à la tige de polissage.

Le premier groupe à engrenages Lufkin pour la production du pétrole a été installé dans un champ pétrolifère de la Côte du Golfe en 1924. C'est là la première machine à engrenages de réduction qui ait été employée avec succès dans l'exploitation pétrolifère en profondeur. Depuis lors, les machines Lufkin ont été installées dans tous les champs pétrolifères les plus importants du monde et ont été adoptées comme équipement standard par plus de cent-vingt-cinq compagnies pétrolifères, les unes importantes, les autres de moindre importance, travaillant à l'exploitation de champs aux Etats-Unis et à l'étranger. La MACHINE A ENGRENAGES LUFKIN a révolutionné la méthode de pompage des puits pétrolifères à un tel point que les Ingénieurs en chef de l'industrie reconnaissent maintenant que partout où l'on emploie les tiges d'aspiration et les barillets moteurs, les Appareils à Engrenages Lufkin pour la production du pétrole a été installé dans un champ pétrolifère de la Côte du Golfe en 1924. C'est là la première machine à engrenages de réduction qui ait été employée avec succès dans l'exploitation pétrolifère en profondeur. Depuis lors, les machines Lufkin ont été installées dans tous les champs pétrolifères les plus importants du monde et ont été adoptées comme équipement standard par plus de cent-vingt-cinq compagnies pétrolifères, les unes importantes, les autres de moindre importance, travaillant à l'exploitation de champs aux Etats-Unis et à l'étranger. La MACHINE A ENGRENAGES LUFKIN a révolutionné la méthode de pompage des puits pétrolifères à un tel point que les Ingénieurs en chef de l'industrie reconnaissent maintenant que partout où l'on emploie les tiges d'aspiration et les barillets moteurs, les Appareils à Engrenages Lufkin pour la production du pétrole a été installé dans un champ pétrolifère de la Côte du Golfe en 1924. C'est là la première machine à engrenages de réduction qui ait été employée avec succès dans l'exploitation pétrolifère en profondeur. Depuis lors, les machines Lufkin ont été installées dans tous les champs pétrolifères les plus importants du monde et ont été adoptées comme équipement standard par plus de cent-vingt-cinq compagnies pétrolifères, les unes importantes, les autres de moindre importance, travaillant à l'exploitation de champs aux Etats-Unis et à l'étranger. La MACHINE A ENGRENAGES LUFKIN a révolutionné la méthode de pompage des puits pétrolifères à un tel point que les Ingénieurs en chef de l'industrie reconnaissent maintenant que partout où l'on emploie les tiges d'aspiration et les barillets moteurs, les Appareils à Engrenages Lufkin pour la production du pétrole a été installé dans un champ pétrolifère de la Côte du Golfe en 1924. C'est là la première machine à engrenages de réduction qui ait été employée avec succès dans l'exploitation pétrolifère en profondeur. Depuis lors, les machines Lufkin ont été installées dans tous les champs pétrolifères les plus importants du monde et ont été adoptées comme équipement standard par plus de cent-vingt-cinq compagnies pétrolifères, les unes importantes, les autres de moindre importance, travaillant à l'exploitation de champs aux Etats-Unis et à l'étranger. La MACHINE A ENGRENAGES LUFKIN a révolutionné la méthode de pompage des puits pétrolifères à un tel point que les Ingénieurs en chef de l'industrie reconnaissent maintenant que partout où l'on emploie les tiges d'aspiration et les barillets moteurs, les Appareils à Engrenages Lufkin pour la production du pétrole a été installé dans un champ pétrolifère de la Côte du Golfe en 1924. C'est là la première machine à engrenages de réduction qui ait été employée avec succès dans l'exploitation pétrolifère en profondeur. Depuis lors, les machines Lufkin ont été installées dans tous les champs pétrolifères les plus importants du monde et ont été adoptées comme équipement standard par plus de cent-vingt-cinq compagnies pétrolifères, les unes importantes, les autres de moindre importance, travaillant à l'exploitation de champs aux Etats-Unis et à l'étranger. La MACHINE A ENGRENAGES LUFKIN a révolutionné la méthode de pompage des puits pétrolifères à un tel point que les Ingénieurs en chef de l'industrie reconnaissent maintenant que partout où l'on emploie les tiges d'aspiration et les barillets moteurs, les Appareils à Engrenages

Les Groupes à Engrenages Lufkin sont de deux types différentes, à savoir: le type à engrenages à chevrons et le type à engrenages à vis sans fin, et se fabriquent dans des grandeurs les plus diverses pour s'adapter aux conditions de tout champ pétrolifère, depuis l'exploitation en surface jusqu'à l'exploitation au moyen de puits d'une profondeur atteignant celle des sondes les plus longues du monde. On peut obtenir des Moteurs à Engrenages centraux de 50 à 150 H.P. tant du type à vis sans fin que du type à chevrons.

L'équipement accessoire, qui comprend entre autres des treuils, des poutres, des poteaux, des bielles de connexion, des dispositifs de support, des poteaux de dégagement, des dispositifs oscillants, des supports de ligne de Tige et des crics—tous accessoires d'une contruction perfectionnée—fait partie de la collection complète de l'Equipement de Production Lufkin.

LUFKIN FOUNDRY & MACHINE CO.

LUFKIN, TEXAS, U.S.A.

DRILLING CABLES OF HIGHEST QUALITY

The Broderick & Bascom Rope Co. of St. Louis, Missouri, is one of the oldest wire rope manufacturers in America. For over fifty years this company has made nothing but wire rope.

Steel cables for every purpose in the production of petroleum are made by this company. Broderick & Bascom cables, made especially for cable tool drilling, and for rotary drilling, have earned excellent reputations in every oil field in America and in many other countries.

The wire is drawn to most exacting specifications by wire manufacturers who have supplied this company during the greater part of its existence. When this high quality wire is received it is carefully tested. Then those wires are selected which will produce the most desirable balance of elasticity, flexibility, toughness and tensile strength. The result is a rope that will give the greatest service in proportion to the cost.

All details and prices will gladly be furnished upon request.

Фирма Broderick & Bascom Rope Company, of St. Louis, Missouri является одним из самых старых фабрикантов проволочных канатов в Америке. Втечение более пятидесяти лет эта фирма не изготовляла ничего иного, кроме проволочных канатов.

Фирма изготовляет стальные канаты для всех нужд нефтепромышленности. Канаты Broderick & Bascom для канатного и для вращательного бурения имеют высокую репутацию на всех нефтяных промыслах Америки и заграницей.

Проволока для канатов соответствует очень точным спецификациям и изготовляется фабрикантом, который поставляя эту проволоку фирме Broderick & Bascom Rope Company втечение почти всего времени их существования.

Когда эта высококачественная проволока доставляется нам, то она подвергается строгим испытаниям. Выбирается такая проволока, которая дает наиболее желательные результаты в смысле ее эластичности, гибкости, прочности и сопротивляемости разрыву. В результате получается канат, который при применении в работе далеко превосходит свою стоимость.

Все детали и цены сообщаются по запросу.

La Broderick & Bascom Rope Co., de St. Louis, Missouri, E. U. A., es una de las más antiguas fábricas de cables de alambres, de los Estados Unidos. Esta gran compañía viene dedicándose exclusivamente a la fabricación de cables de alambres, desde hace más de medio siglo.

Fabrica cables de alambres de acero para todo servicio, en la explotación de petróleo. Los cables Broderick & Bascom, especiales para perforación por herramienta de cable y por rotativa, se han hecho famosos en todo campo petrolífero de los Estados Unidos y otras partes del mundo.

El alambre se estira de acuerdo con las especificaciones más precisas, por conocidos fabricantes de alambres, que nos han suministrado este material, desde hace muchos años. Al recibir este excelente alambre, lo sometemos a nuestros propios ensayos y pruebas. En la fabricación de nuestros cables, empleamos sólo aquellos alambres que se conforman con nuestras normas de elasticidad, flexibilidad, firmeza y fuerza de tensión. El resultado es un cable de alambres que da el mayor rendimiento posible, en relación a su precio.

Gustosamente suministraremos información detallada y precios a quien lo silicite.

La Broderick & Bascom Rope Co., de St. Louis, Missouri, est un des fabricants de câbles métalliques les plus anciens des Etats-Unis. Elle est spécialisée uniquement dans la fabrication des câbles depuis plus de cinquante ans.

Cette compagnie fabrique des câbles d'acier pour tous emplois de l'industrie du pétrole. Les câbles Broderick & Bascom spécialement destinés au forage par outil à câble, et pour le forage rotatif, ont acquis une réputation excellente dans tous les champs pétrolifères des Etats-Unis et dans un grand nombre d'autres pays.

Cette compagnie s'approvisionne en fil, étiré suivant des spécifications très strictes, auprès de fabricants de fil qui en ont assuré les fournitures de fil pendant presque toute la durée de son existence. A sa réception, ce fil de qualité supérieure est soumis à un essai soigneux. C'est ainsi qu'on sélectionne les fils susceptibles de produire une combinaison bien équilibrée d'élasticité, de souplesse, de ténacité et de résistance à la traction. Il en résulte un câble qui rendra des services maximums par rapport à son prix.

Tous détails et prix seront communiqués à tous ceux qui en feront la demande.

BRODERICK & BASCOM ROPE COMPANY

ST. LOUIS, MISSOURI, U.S.A.

Factories: St. Louis, Missouri, and Seattle, Washington.

COMPLETE EVAPORATION ENGINEERING SERVICE

The Wiggins Floating Roof is used on working tanks handling crude oil, gasoline, and other oil products. It rides directly on the oil in the tank, preventing vapor from escaping to the air.

The Wiggins Breather Roof prevents evaporation loss from similar products held in standing storage tanks. This roof flexes up and down, taking care of thermal expansion and contraction without permitting vapor to escape through the vents.

Pressure tanks are used to prevent evaporation loss from volatile gasolines and other light oils that boil at existing climatic temperatures. Instead of allowing vapor to escape, it is held inside the tank and the pressure allowed to build up to a predetermined point.

The new Horton radial-cone design is used where a large amount of storage is required and 5 or 6 lbs. pressure is sufficient to stop all losses. It is built in 55,000 or 80,000 bbl. sizes.

The Hortonspheroid, in sizes from 2,500 to 40,000 bbl. sizes is used when it is desirable to have from 5 to 15 lbs. pressure.

The Hortonsphere, a spherical structure built in standard sizes of 2,500, 5,000 and 10,000 bbls. capacity, is used for pressures of 25 lbs. and up.

Фирма Chicago Bridge &Iron Works втечение последних 10-ти лет разработала целый ряд специальных резервуаров для хранения нефти и нефтепродуктом, в которых при любых существующих условиях, исключены потери от испарений.

Плавающая крыша Wiggins применяется на рабочих резервуарах для сырой нефти, газолина и других нефтепродуктов. Крыша плавает на жидкости и не дает возможность парам улетучиться в атмосферу.

Крыша Wiggins диафрагмового типа предотвращает улетучивание паров из резервуаров, предназначенных для хранения нефти и нефтепродуктов. Эта крыша выгибается вверх или вниз, а зависимости от термических условий и не дает возможность парам улетучиваться через вентиля.

Резервуары, которые работают под давлением, применяются тогда, когда надо избежать потери от улетучивания паров легких газолинов, или других летучих продуктов способных закипать при высоких температурах атмосферного воздуха. Вместо того, чтобы дать парам выход, их оставляют в резервуаре, в котором разрешают давлению подняться до такого давления, на какое резервуар расчитан.

Новая радиально-коническая конструкция Horton применяется там, где надо хранить большие количества продуктов и где давление в 5 или 6 англо-фунтов является достаточным для предупреждения улетучивания. Эта конструкция принимается для резервуаров емкостью в 55.000 или 80.000 баррелей.

Сфероидальная конструкция Horton применяется для резервуаров емкостью от 25.000 до 40.000 баррелей и там где требуется давление от 5 до 15 англо-фунтов.

Сферическая конструкция Horton строится стандартных фазмеров, емкостью в 2.500, 5.000 и 10.000 баррелей и применяется для давлений в 25 англо-фунтов и выше.

Durante los 10 años pasados la Chicago Bridge & Iron Works ha desarrollado un surtido completo de tanques de depósito especiales para petróleo en los que se evitan las pérdidas por evaporación prácticamente en todas las condiciones.

Los Techos Flotantes Wiggins se usan en los tanques que contienen petróleo crudo, gasolina u otros productos de petróleo. Descansan directamente sobre el petróleo evitando que el vapor se escape al aire.

Los Techos Respiradores Wiggins evitan las pérdidas por evaporación de productos semejantes depositados en tanques verticales. Estos techos se flexionan para arriba y para abajo según las expansión o contracción térmica sin permitir que el vapor se escape por los respiraderos.

Los taques de presión se emplean para evitar las pérdidas por evaporación de las gasolinas volátiles y otros aceites ligeros que hierben a las temperaturas de las localidades.

El diseño del Cono-Radial Horton se usa en dode se necesita gran cantidad de espacio para lamacenar, siendo 5 ó 6 libras de presión suficientes para deterner todas las pérdidas. Se construyen con capacidad para 55.000 ó 80.000 barriles.

El Hortonspheroid se construye con capacidad desde 2.500 hasta 40.000 barriles y se usa cuando se desea tener presión de 5 a 15 libras.

El Hortonsphere es una estructura esférica construída en tamaños normales para 2.500; 5.000; y 10.000 barriles, y se usa con presiones de 25 y más libras.

Au cours des 10 dernières années, la Chicago Bridge & Iron Works a mis au point un assortiment complet de réservoirs spéciaux d'emmaganisage pour pétrole qui éliminent les pertes dues à l'évaporation dans la plupart des conditions.

On emploie le Toit Flottant Wiggins sur les réservoirs contenant du pétrole brut, de l'essence et autres produits pétrolifères. Il est en contact direct avec le pétrole du réservoir, ce qui empêche les vapeurs de s'échapper dans l'air.

Le Toit Respirateur Wiggins élimine les pertes d'évaporation de produits semblables contenus dans des réservoirs d'emmagasinage verticaux. Ce toit fléchit vers le haut ou vers le bas, tenant ainsi compte de l'expansion et de la contraction thermiques, et empêchant les vapeurs de s',chapper par les respirateurs.

On emploie les réservoirs à pression pour éliminer les pertes d'évaporation d'essences volatiles et d'autres huiles légères qui entrent en ébullition aux températures ambiantes. Au lieu de laisser les vapeurs s'échapper, on les maintient dans le réservoir et on laisse leur pression atteindre un certain point fixé à l'avance.

On emploie le nouveau modèle Radioconique Horton quand on a besoin d'un espace considérable d'emmagasinage et quand une pression de 5 ou 6 livres suffit à éliminer toutes les pertes. On le construit dans les capacités de 55.000 ou de 80.000 barils.

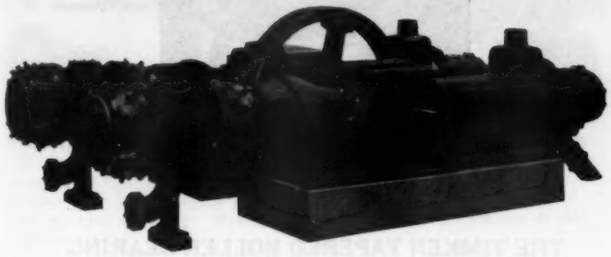
Le Hortonspheroid, de capacités allant de 2.500 à 40.000 barils, s'emploie quand il est désirable qu'on maintienne une pression de 5 à 15 livres.

Le Hortonsphère, une structure sphérique fabriquée dans les capacités standards de 2.500, 5.00 et 10.000 barils s'emploie pour des pressions de 25 livres et au-dessus.

CHICAGO BRIDGE & IRON WORKS

CHICAGO - - - - - - - - - - - ILLINOIS, U.S.A.

COOPER-BESSEMER SPECIALIZING FOR 100 YEARS



There are probably more Cooper-Bessemer gas engine driven compressors in the oil fields of the world than any other make. This is explained by two facts:

First, Cooper-Bessemer has been specializing in power machinery for one hundred years and since the very beginning of the oil industry its major interest has been engines and compressors for the oil fields.

Second, Cooper-Bessemer has taken great pride in building the best possible equipment for the most severe oil field service.

The Cooper-Bessemer line now includes two and four-cycle gas engines for pumping and drilling, two and four-cycle horizontal and vertical gas engines for direct driving compressors, electric generators, pumping powers or any other general power service, in sizes up to 1,500 H.P., and a complete line of solid injection vertical full Diesel oil engines in sizes from 30 H.P. to 1,200 H.P. for every possible oil field service.

Local representatives are available in nearly every oil field in the world. First requests for information or quotations should be addressed to the home office at Mt. Vernon, Ohio, U. S. A.

На нефтяных промыслах всего мира вероятно имеется больше компрессоров фирмы Cooper-Bessemer, приводимых в движение газомоторами, чем какой-либо другой фирмы. Это объясняется двумя фактами:

Во первых, фирма Cooper-Bessemer специализируется втечение ста лет в изготовления силовых установок и, в самом начале роста нефтяной индустрии, ее главное внимание было направлено на двигатели и компрессоры для нужд нефтепромышленности.

Во-вторых фирма Cooper-Bessemer повила себе задачей изготовлять оборудование наилучшего качества, пригодное для самых тяжелых условий промысловой работы.

В серию изделий Cooper-Bessemer в настоящее время включены: — двух — и четырехтактные газовые двигатели для откачки и бурения; двух — и четырехтактные горизонтальные и вертикальные газомоторы для приведения в действие компрессоров, электро-генераторов, насосных приводов, или для других общих целей, мощностью до 1500 лош. сил; также полная серия вертикальных двигателей Дизель с вспрыскиванием топлива, мощностью от 30 лош. сил до 1200 лош. сил для всевозможных промысловых работ.

Представители фирмы имеются почти на всех промыслах всего мира. Первые запросы о деталях или ценах должны направляться в главную контору фирмы находящейся в Mt. Vernon, Ohio. U.S.A.

En los campos petrolíferos del mundo hay probablemente más compresores accionados por motores de gas Cooper-Bessemer, que los de toda otra marca del mercado. Esto se debe a dos razones:

En primer lugar, la Cooper-Bessemer se ha dedicado con especialidad a maquinaria motriz, desde hace cien años, y desde el comienzo de la industria petrolera, su principal interes se ha concentrado en motores y compresores para la industria del petróleo.

En segundo lugar, la Cooper-Bessemer se ha afanado siempre por construir el mejor equipo posible para satisfacer los más exigentes requisitos de la industria petrolera.

El surtido Cooper-Bessemer comprende ahora motores de gas de dos y de cuatro ciclos, para servicio de bomba y de perforación, motores de gas verticales y horizontales para acomplamiento directo a compresores, generadores eléctricos y otras máquinas similares. Sus modelos se ofrecen en diversas capacidades y potencias, con máxima de 1500 caballos de fuerza. También fabricamos un surtido completo de motores de petróleo verticales, de tipo Diésel, de 30 a 1200 caballos de fuerza, para todo servicio en campo petrolífero.

En casi todas las zonas petroleras del mundo tenemos representantes locales. Toda solicitud por información debe dirigirse primeramente a nuestra oficina principal en Mt. Vernon, Ohio, E. U. A.

Il existe probablement davantage de compresseurs à commande par moteur à gaz Cooper-Bessemer, sur les chantiers des champs pétrolifères du monde entier, que de toute autre marque. Cela pour deux raisons:

D'abord, la maison Cooper-Bessemer se spécialise depuis un siècle dans la fabrication des machines à force motrice et, depuis le début de l'industrie du pétrole, elle prend un intérêt tout spécial aux compresseurs et moteurs pour champs pétrolifères.

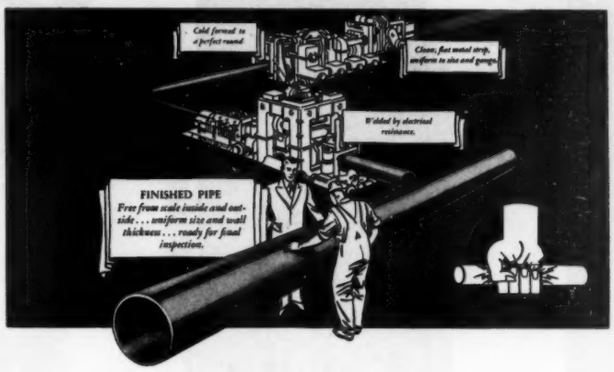
Ensuite, cette maison met un point d'honneur à construire le matériel le meilleur possible pour le service le plus rigoureux sur les chantiers.

L'assortiment Cooper-Bessemer comprend maintenant des moteurs à gaz à deux et à quatre temps pour pompage et forage, des moteurs à gaz horizontaux et verticaux à deux et à quatre temps pour commande directe de compresseurs, de générateurs électriques ou pour tout autre service de force motrice en général, en grandeurs allant jusqu'à 1.500 chevaux, et un assortiment complet de moteurs massifs à huile, entièrement Diesel, à injection, en grandeurs allant de 30 à 1.200 chevaux, pour tous les services possibles sur chantier de champ pétrolifère.

On trouve des représentants locaux dans presque tous les centres pétrolifères du monde. Les premières demandes de renseignements et de prix doivent être adressées à notre siège social à Mt. Vernon, Ohio, É. U. A.

THE COOPER-BESSEMER CORPORATION
MT. VERNON, OHIO, U. S. A.

REPUBLIC ELECTRIC WELD PIPE


Cold formed to a perfect round
Clean, flat metal strip, uniform in size and gauge
Welded by electrical resistance.
FINISHED PIPE
Free from scale inside and outside . . . uniform size and wall thickness . . . ready for final inspection.

Republic Electric Weld Pipe—made from clean metal strip, cold formed to a perfect round and then welded by Republic's exclusive electrical resistance welding process—offers many advantages to the oil and gas industries.

The weld is 100 per cent—as strong as any part of the pipe wall. Wall thickness is absolutely uniform. The pipe is perfectly round. Inside and outside surfaces are smooth and free from scale. The pipe is uniformly straight. Long lengths may be had up to 50 feet. Sizes range up to 16-inch O.D. May be used for any type of joint. May be had with any degree of ductility or strength.

Republic Electric Weld Pipe is available in open hearth steel, special alloy steel or rust-resisting Toncan Copper Molybdenum Iron—depending upon installation conditions.

Since its introduction, five years ago, over 7,000 miles has been placed in service in both welded and coupled pipe lines and in the tubing and casing of wells.

Трубы Republic с электрическим сварным швом изготовляются из полос однородного чистого металла. Вальцовка производится в холодном состоянии и придает полосе совершенно правильную цилиндрическую форму, после чего шов сваривается исключительно хорошим электрическим процессом Republic. Получаются трубы, имеющие многие достоинства при применении их для нефтяной и газовой промышленности.

Сварной шов также прочен, как любая часть стенки трубы. Толщина стенок абсолютно одинакова. Труба имеет совершенно правильную цилиндрическую форму. Внутренние и наружные стенки имеют гладкую поверхность и на ней нет окалины. Труба совершенно прямая. Длина трубы может быть доведена до 50-ти фут. Они изготовляются всех диаметров до наружного диаметра в 16 дюймов. Эти трубы можно применять для соединений любых типов. Они изготовляются любой гибкости и любой крепости.

Электрически сваренные трубы Republic в зависимости от условий работ, изготовляются из разных материалов: мартеновской стали, специальных стальных сплавов, или из нержавеющего железа Toncan с содержанием меди и молибдена.

Втечение четырех лет со дня выпуска на рынок, было установлено более 7000 миль труб Republic как на сварных трубопроводах и на трубопроводах с муфтами, так и в виде насосных и обсадных труб для скважин.

El tubo Republic de soldadura électrica, hecho de lisa lámina metálica, de perfecta formación cilíndrica en frío y soldada por el exclusivo procedimiento Republic de soldadura por resistencia eléctrica, ofrece muchas ventajas a las industrias del petróleo y gas.

La soldadura es tan firme como cualquier punto de la pared del tubo. El espesor de la pared es absolutamente uniforme. El tubo es perfectamente cilíndrico. Las superficies interior y exterior son lisas y exentas de escama. El tubo es uniformemente recto. Se ofrecen en largos hasta de 50 pies. Los tamaños llegan hasta 16 pulgadas de diámetro exterior. Puede emplearse este tubo con cualquier tipo de unión, y puede suministrarse con cualquier grado de ductibilidad o firmeza.

El tubo Republic de soldadura eléctrica se ofrece en acero Siemens-Martin, aleación especial, o hierro al cobre y molibdeno Toncan de tipo inoxidable, según sean los requisitios del trabajo y aplicación en la práctica.

Desde su introducción, hace cuatro años, más de 7000 millas de esta clase de tubo, en líneas acopladas y soldadas, lo mismo que tubería y forradura de pozos.

Le Tubage Republic à Soudage Electrique—fabriqué à partir de bandes métalliques nettoyées, arrondi parfaitement à froid, puis soudé par le procédé de soudure électrique résistante exclusif, offre de nombreux avantages aux industries du pétrole et du gaz.

La soudure est impeccable—aussi solide que toute autre partie de la paroi du tube. L'épaisseur de la paroi est absolument uniforme. Le tubage est parfaitement rond. Les surfaces intérieure et extérieure en sont unies et exemptes d'écailles. Le tubage est uniformément rectiligune. Il se vend en longueurs allant jusqu'à 50 pieds. Les diamètres vont jusqu'à 16 pouces (extérieurement). Peuvent s'employer pour tous genres de joints. Se fabriquent avec les degrés les plus variés de ductilité ou de résistance.

Le Tubage Republic à Soudage Electrique existe en acier Siemens-Martin, en aciers alliés ou en fer cuprifère antirouille au molybdène Toncan—répondant chacun à des conditions particulières d'installation.

Depuis sa mise sur le marché, il y a quatre ans, plus de 7.700 milles en ont été mis en service tant comme canalisations soudées que comme canalisations à accouplement, ainsi que pour le tubage et le cuvelage des puits.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES YOUNGSTOWN, OHIO

MOORE TYPE KAY DERRICK

Lee C. Moore & Co., Inc., with plants in both Pittsburgh, Pa., and Tulsa, Okla., representatives and stocks in principal active fields, manufacture a complete series of A.P.I. drilling and pumping Derricks with both tubular and angle legs. The patented Kay bracing is efficient, rigid and easy to erect. They also manufacture a complete line of derrick accessories including crown blocks with babbitted, bronze or roller bearings, working platforms, frame and interior floor sills and substructures for all purposes.

They also have a complete line of improved pumping equipment, including samson posts, silicon steel walking beams, oil bath and roller bearing beam hangers. Bull, band and calf wheels, Jack posts, bull and calf wheel posts with self-aligning bearings. Dust proof oil bath rig irons. Reduction gears with both single and double reduction. Spudders and clean-out machines.

Write for complete information on any item.

Фирма Lee C. Moore & Co., Inc. имеет заводы в Pittsburgh, Pa. и Tulsa, Oklahoma, а также представителей и склады на главных действующих промыслах. Эта фирма изготовляет полную серию бурильных и насосных вышек стандарта А. Р. I. (Американского Нефтяного Института) со стойками как из труб, так и из угольников. Патентованные крепления Кау надежны, прочны и сборка их производится легко. Фирма также изготовляет всевозможные принадлежности для вышек, включая кронблоки с баббитовыми, бронзовыми и роликовыми подшипниками, рабочие платформы, раму и крепления для пола, а также разные стальные конструкции.

Кроме того, фирма изготовляет комплектную серию усовершенствованного насосного оборудования, включая стойки, балансиры из стали с содержанием кремния, балансирные подвески с масляными ваннами или роликовыми подшипниками, шкивы инструментальные, шкивы главного привода и талевые шкивы, стонки главного привода, стонки инструментального и талевого приводов с самоцентрирующимися подшипниками. Части станков для канатного бурения с непроницаемыми для пыли масляными ваннами. Редукционные шестерни одиночные и двойные. Станки для оттяжки и чистки.

Полные информации о каждой отдельной машине высылаются по требованию.

La Lee C. Moore & Co., Inc., con fábricas en Pittsburgh, Pa. y Tulsa, Okla., E. U. A., y con representantes y depósitos en los principales centros petrolíferos del mundo, construye un completo surtido de torres para perforación y extracción por bomba, bajo la conocida marca A. P. I. Las ofrece con patas tubulares o angulares. El refuerzo patentado Kay es eficaz, rígido y fácil de montar. También fabrica un surtido completo de accesorios para torres, incluyendo bloques de corona, con cojinetes de babbit, de bronce o de rodillos, plataformas móviles, soleras o soportes de armazón y piso interior y subestructuras para todo servicio.

También ofrece un surtido completo de equipos para bombas notablemente perfeccionados, en el que se incluyen postes especiales, vigas de acero especial, soportes de viga para baños de aceite y cojinetes de rodillos; ruedas diversas, postes corrientes, y postes para ruedas con cojinetes de alineación automática. En este surtido se comprenden también sostenes para baños de aceite a prueba de polvo, mecanismos de reducción con desmultiplicación sencilla o doble y máquinas limpiadores.

Sírvase pedirnos información sobre cualquiera de estos artículos.

La Lee C. Moore & Co., Inc., qui a des usines à Pittsburgh, Pensylvanie, et à Tulsa, Oklahoma, ainsi que des représentants et des dépôts dans les principaux gisements en exploitation, fabrique un assortiment complet de derricks de forage et de pompage à pieds en tubes et à pieds en cornières. L'entretoisement breveté Kay est efficace, rigide et de montage facile. Cette maison fabrique aussi un assortiment complet d'accessoires de derrick comprenant des blocs de sommet avec paliers à coussinets antifriction, coussinets en bronze ou à roulements à rouleaux, des plateformes d'opération, des semelles de châssis et de plancher intérieur et des charpentes pour tous usages.

Elle a aussi un assortiment complet et perfectionné de matérial de pompage comprenant des poteaux de support, balanciers en acier au silicium, chaises pour solives à roulements rouleaux fonctionnant dans un bain d'huile, roues de commande: grande, petite et à bande; poteaux, poteaux de support des roues avec roulements à alignement automatique; accessoires de manoeuvre fonctionnant dans un bain d'huile et à l'épreuve de la poussière; engrenages de démultiplication à simple et double réduction; sondes pour forage préliminaire "spudders" et machines de nettoyage.

Demander des renseignements complets sur chaque article.

LEE C. MOORE & CO., Inc.

PITTSBURGH, PA., U.S.A.

THE TIMKEN TAPERED ROLLER BEARING

The Timken Tapered Roller Bearing consists of tapered rollers operating between tapered inner and outer races. These are the load-carrying elements. A specially-designed cage keeps the rollers accurately spaced. Positive roller alignment is secured by two-point contact of the large ends of the rollers with a rib on the inner race.

This construction gives the Timken Bearing inherent ability to carry all thrust, radial and combined loads at the same time; holds moving parts in correct and constant alignment; eliminates friction and wear; saves power and lubricant. These advantages have made Timken Bearings dominant in all types of oil field equipment, and in all other types of machinery throughout all industry.

Timken Tapered Roller Bearings are made of a special grade of Timken electric furnace alloy steel—the most efficient bearing material ever developed. Rollers and races are case hardened and accurately ground to size.

Конические роликовые подшипники Timken состоят из конических роликов, которые работают между двумя коническими направляющими: внутренней и внешней. Эти три элемента несут на себе всю нагрузку. Клетка специальной конструкции держит ролики на правильном расстоянии друг от друга. Правильное положение роликов обеспечивается двухточеным контактом широкой стороны ролика с ребром, имеющимся на внутренней направляющей.

Эта конструкция дает подшипникам Timken способность выдерживать одновременно прямые, радиальные и комбинированные нагрузки; все движущиеся части всегда сохраняют правильное положение; трение и износ отсутствуют; сохраняется энергия и сберегается смазка. Благодаря этим достоинствам подшипники Timken встречаются чаще других на всех машинах, применяемых на нефтяных промыслах, а также применяемых во всех других индустриях.

Конические роликовые подшипники Timken изготовляются из стали специального сплава, получаемой в электрических печах Timken; эта специальная сталь является наилучшей из всех известных материалов для подшипников. Ролики и направляющие закалены и аккуратно отшлифованы до требуемых размеров.

El Cojinete de Rodillos Cónicos Timken consiste de rodillos cónicos que giran entre correderas cónicas internas y externas, siendo éstas los elementos que soportan las cargas. Una caja de diseño especial mantiene los rodillos exactamente separados. El alineamiento exacto de los rodillos se asegura por dos puntos de contacto de las extremidades más grandes de los rodillos con un reborde en la corredera interna.

Esta construcción da a los Cojinetes Timken: habilidad natural de recibir todo el empuje, y al mismo tiempo recibir las cargas radiales y combinadas; mantener las piezas movibles en alineamiento constante y exacto; eliminar rozamientos y desgastes; ahorrar potencia y lubricante, Estas ventajas han hecho a los Cojinetes Timken dominantes en todos los tipos de equipos para los campos de petróleo y en otros tipos de maquinaria en todas las industrias.

Los Cojinetes de Rodillos Cónicos Timken son hechos de aleaciones de acero Timken especiales preparadas en horno eléctrico—el material más eficiente para cojinetes hasta ahora desarrollado. Los rodillos y las correderas son de superficie en durecida y pulidos a sus dimensiones exactas.

Le roulement Timken à rouleaux coniques se compose de rouleaux coniques fonctionnant entre une cuvette intérieure conique et une cuvette extérieure également conique. Ce sont les éléments qui supportent la charge. Une cage de conception spéciale maintient les rouleaux à l'écartement voulu. L'alignement positif des rouleaux est assuré par un contact de deux points entre la grosse extrémité des rouleaux et une nervure aménagée sur la cuvette intérieure.

Cette construction permet au rouleau Timken de supporter les efforts de butée, les efforts radiaux et les efforts combinés de butée et radiaux à la fois; ells assure l'alignement exact et constant des pièces mobiles; elle élimine le frottement et l'usure et elle économise la force motrice et le lubrifiant. Ces avantages ont donné la supériorité aux roulements Timken sur tous les autres dans le matérial de tout genre pour champs pétrolifères ainsi que dans les machines de tous les autres genres dans l'industrie tout entière.

Les roulements Timken à rouleaux coniques sont en acier spécial au four électrique Timken d'une qualité particulière —cet acier spécial est la substance la plus afficace qui ait jamais été produite pour la fabrication des roulements. Les rouleaux et les cuvettes sont cémentés et rectifiés avec précision à la grandeur exacte.

THE TIMKEN ROLLER BEARING COMPANY

CANTON, OHIO, U.S.A.

RIDGID

RIDGID Pipe Wrench

Sizes 6" to 60". Guaranteed unbreakable housing. Full-floating hook jaw. Replaceable heel jaw. Easy turning adjustment nut in open housing. Powerful I-beam handle.

RIDGID Pipe Cutter

Thin tool-steel cutter blade gives 300% more cuts. Blade fits any RIDGID type cutter. Four sizes, ⅛" to 4" capacities. Guaranteed unbreakable housing.

RIDGID Pipe Threader

Threads 1" to 2" pipe with same set of chasers, true accurate threads. Chasers set to size mechanically. New type work-holder, quick adjustment to pipe. Light weight, strong.

ТРУБНЫЕ КЛЮЧИ RIGID

Размеры — 6" до 60". Гарантированный от излома корпус. Раздвигающаяся до конца крючкообразная челюсть. Сменная опорная челюсть. Легко-поворачиваемая установочная гайка, помещенная в открытом пазу. Прочная рукоятка двухтаврового сечения.

ТРУБОРЕЗКА RIGID

Тонкий режущий нож из инструментальной стали отрезывает на 300% больше труб. Этот нож можно применять с любой труборезкой типа RIGID. Имеются четыре размера труборезки для труб от ⅛" до 4". Корпус гарантирован от излома.

ТРУБНЫЙ КЛУП RIGID

Одним и тем же набором плашек можно нарезывать трубы от 1"до 2", причем резьба получается точной и аккуратной. Плашки механически устанавливаются по размеру трубы. Сильный инструмент при легком весе.

LAVE DE TUBO RIDGID

Tamaños: de 6" a 60". Cuerpo indestructible, garantizado. Mandibula de tipo completamente flotante. La mandibula inferior es de tipo reemplazable. Tuerca de fácil rotación para el ajuste, en el cuerpo abierto. Mango firme, en forma de viga de doble T.

CORTADOR DE TUBO RIDGID

Su delgada cuchilla de acero de herramienta da 300% más cortes. La cuchilla ajusta en cualquier cortador Ridgid. Cuatro tamaños, de ⅛" a 4". Cuerpo indestructible garantizado.

ROSCADOR DE TUBO RIDGID

Labra filete o rosca en tubo de 1" a 2" con el mismo juego de dados. Estos se ajustan a tamaño, mecánicamente. Nuevo tipo de sujetador y rápido ajuste al tubo. De peso liviano y muy firme.

CLEF A TUBES RIDGID

Grandeurs de 6" à 60". Garantie incassable. Machoire-crochet réglable. Machoire-talon remplacable. Ecrou de réglage se déplaçant facilement dans l'ouverture. Manche robuste en forme d'I.

COUPE-TUBES RIDGID

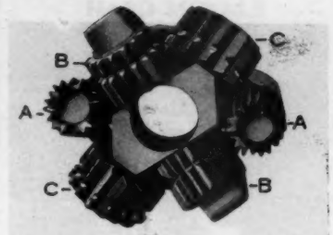
Le tranchant de ce coupe-tubes en acier produit 300% plus de coupures. Il s'adapte à tout modèle de Coupe-tubes RIDGID. Quatre grandeurs, capacités de ⅛" à 4" Cet instrument est garanti incassable.

OUTIL A FILETER LES TUBES RIDGID

Filète des tubes de 1" à 2" au moyen du même jeu de filières à peigne; on obtien des filetages d'une très grande précision. Ajustement mécanique des filières à peigne. Nouveau modèle de porte-pièce, adaptation rapide au tube. Léger et robuste.

THE RIDGE TOOL COMPANY

ELYRIA, OHIO, U.S.A.



Hard Formation Head

EXCEPTIONAL CORE DRILLS

The Dean Core Drill has made exceptional recoveries in the toughest formations in the deep Kettleman and Belridge oil fields of California. Its features include: Interchangeable drag type and roller bearing rock type heads; patented core retainer which driller can open or close at will, severing the core at its base, by mechanical means; large circulation passages; simple in design, smooth running, and easy to operate. All heads heat treated, ground to size, and tungsten carbide faced. Sizes 3⅞ to 27-inch diameter; barrels in standard 20 and 30-foot lengths.

Грунтоноской DEAN были произведены исключительные геологические обследования в очень твердых породах глубоких скважин калифорнийских районов Kettleman и Belridge. Из достоинств этой грунтоноски надо отметить следующие: головка работающая стальной дробью и головка с роликовыми подшипниками для прохождения скалистых пород, — взаимозаменяемы; патентованный задерживатель колонки грунта, который может быть открыт или закрыт по желанию рабочего, механически срезывает колонку у ее основания; большие циркуляционные каналы, простота конструкции; плавность работы и легкость обращения. Все головки термически обработаны, обточены до правильных размеров и облицованы твердым сплавом, в состав которого входит вольфрам и корбид. Диаметры от 3⅞ до 27 дюймов. Стандартная длина цилиндра 20 и 30 фут.

La Barrena Dean para sacar muestras ha logrado recuperaciones excepcionales en las formaciones más tenaces, en los campos de petróleo Kettleman y Bebridge de California. Sus detalles incluyen: Tipo intercambiable de arrastre y cabezales con cojinetes de rodillos del tipo de roca; retenedor patentado de las muestras, que puede ser abierto o cerrado por el operador, cortando la muestra por la base por medios mecánicos; grandes pasos para la circulación; sencillez en el diseño; de funcionamiento suave; y fácil de manejarse. Todos los cabezales son tratados al caldeo, pulidos al tamaño, y están revestidos de carburo de tungsteno. Se hacen en tamaños de 3⅞ a 27 pulgadas de diámetro; los cañones en los tamaños normales son de 20 y 30 pies de largo.

Le Tube Carottier Dean de forage a permis de prélever des échantillons dans des formations exceptionnellement dures dans les champs pétrolifères Kettleman et Belridge en Californie à de grandes profondeurs. Ses principales caractéristiques sont les suivantes: Têtes interchangeables du type à traction et du type à roulement pour rocs; sonde brevetée de carottage que le sondeur peut ouvrir ou fermer à volonté, détachant la carotte par incision à sa base par des moyens mécaniques; passages spacieux de circulation; de construction simple, à marche douce et de conduite aisée. Toutes les têtes sont traitées thermiquement, meulées à la cote, et plaquées de carbure de tungstène. Grandeurs de 3⅞ à 27 pouces de diamètre; barillets standardisés de 20 et 30 pieds de long.

CHAS. A. DEAN

Bakersfield, California, U.S.A.

GUIBERSON TOOLS REDUCE COSTS

GUIBERSON patented oil field specialties are in world-wide use because they reduce operating costs. The Guiberson Swab is the only flexible-cup swab. Sales exceed all others combined. The Guiberson Tubing Catcher, for preventing fall of tubing, is unequalled for its purpose. The Guiberson Control Head Packer is the only packer which can be run in against heavy flow. The Guiberson Undereamer is the most powerful on the market, with three times more down-thrust bearing surface than others.

Guiberson also makes Casing, Tubing and Wire Line Oil Savers, Disc Bits, Bottom Water Plugs, Tubing Strippers and Anchors, Tongs and Spiders. Descriptive booklets on request.

Патентованные инструменты Guiberson употребляется на нефтяных промыслах всего мира, так как они уменьшают оперативные расходы. Свабы Guiberson (подсасывающие поршни) являются единственными свабами с гибкими манжетами. Эти свабы продаются в большем количестве чем свабы других систем все вместе взятые. Труболовка Guiberson для насосных труб предотвращает падение их в скважину и ей нет равной на рынке. Пакер Guiberson для контрольной головки представляет собою единственный пакер, который можно опускать в скважину в то время, когда из нее поступает сильная струя нефти. Расширитель Guiberson является самым сильным из имеющихся на рынке с площадью опорных подшипников в три раза большей, чем у других расширителей.

Фирма Guiberson также изготовляет предохранительные сальники для обсадных и насосных труб и для канатного бурения, дисковые долотья и ядоки, ключи и спайдеры. Каталог фирмы с описанием инструментов высылается по запросу.

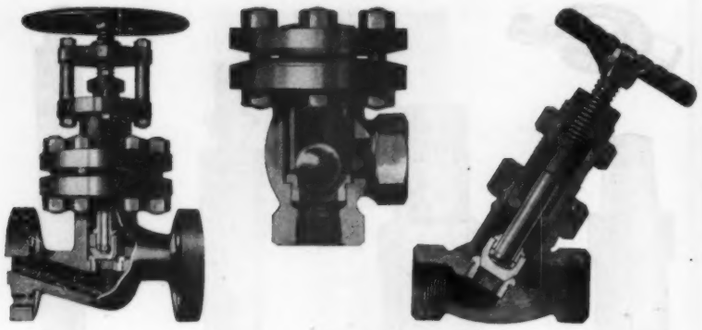
Las Especialidades GUIBERSON patentadas para los campos de petróleo se usan en todo el mundo a causa del bajo costo de su manejo. El escobellón Guiberson es la única escoba de taza flexible. Su venta exede la de todas las otras combinadas. El pezcador de tubos Guiberson, que evita la caída de las tuberías, no tiene igual para ese fín. El cabezal Obturador Guiberson es el único obturador que puede correrse contra una fuerte corriente. El Ampliador de sondas Guiberson es el más poderoso que existe en mercado, con superficie de empuje tres veces mayor que cualquiera otro de su especie. La Guiberson también fabrica tuberías de revestimiento; tubos; economizadores de tuberías de alambre; bocas de barreras de disco; tapones para el agua del fondo; tenazas y arañas. A solicitud enviamos folletos descriptivos.

Les Spécialtités brevetées GUIBERSON pour les champs pétrolifères sont d'un emploi universel parce qu'elles permettent d'abaisser les prix de revient. Le faubert Guiberson est le seul faubert à cuvette flexible. Le chiffre de vente correspondant dépasse celui de tous les autres fauberts ensemble. L'attrape-tubes Guiberson n'a pas son égal pour empêcher les tubes de tomber. La Garniture de Tête régulatrice Guiberson est la seule garniture qu'on puisse introduire contre un fort écoulement. L'élargisseur Guiberson est le plus puissant existant sur le marché, avec une surface de poussée trois fois plus grande que celle des autres.

Guiberson fabrique aussi du tubage d'isolement, du tubage d'extraction, des économiseurs d'huile pour câbles, des trèpans à disque, des tampons pour l'eau de fond, racleurs et ancres de tubage, tenailles et croisillons. Livrets descriptifs envoyées sur demande.

THE GUIBERSON CORPORATION

BOX 1106, DALLAS, TEXAS, U. S. A.



EDWARD REFINERY VALVES

For severe service, Edward drop-forged steel valves are available in a variety of sizes, types and pressures. Carefully selected materials meet the requirements of high-pressure, high-temperature and corrosive conditions. Details of design have been carefully worked out through years of pioneer experience in this field. In addition to globe and angle stop valves, check valves are offered in both ball and piston designs, as well as forged steel relief valves and gage or instrument valves.

Edward manufacturing operations are conducted under exacting control. Prior to careful inspection of all machine operations, each bar of steel is subjected to laboratory examinations. Check tests after heat treatment are made to assure those grain structural conditions essential to long life and dependable service. "EValpak" packing withstands high-temperature conditions.

In addition to small forged steel valves for the refinery, Edward also offers cast steel valves, in the larger sizes, in the American standard pressure series from 300 lb. wsp. to 1,500 lb. wsp., and "Ferac" (high strength cast iron) metal for steam pressures up to 250 lb. at 500° F. For the boiler house, Edward specializes in non-return valves, blow-off valves and feed line stop-check valves. Catalogs on request.

Кованные стальные вентили Edward применяются для тяжелых условий работы. Они изготовляются различных размеров, типов и для разных давлений. Тщательно подобранные материалы отвечают требованиям высоких давлений, высоких температур и сопротивляемости раз'еданию. Детали конструкции разработаны внимательно на основе многолетних пионерских опытов. В дополнение к прямым и угловым вентилям, фирма также изготовляет приемные клапаны как шарообразного вида, так и поршневого, а также выпускные клапаны и вентили для водомерных стекол и инструментов.

Производство Edward ведется под строгим контролем. До внимательной инспекции всех механических операций, каждая стальная болванка подвергается лабораторным испытаниям. Также производится контрольная инспекция стали после ее термической обработки, чем обеспечивается правильная структура стали, столь необходимая для продолжительной и надежной работы. Для вентилей применяется набивка EValpak противостоящая высоким температурам.

В дополнение к небольшим кованным вентилям для нефтеперегонных заводов, «Edward» также изготовляет задвижки больших размеров из литой стали американских стандартных серий для гидростатических давлений от 300 до 1500 англо-фунтов, а также задвижки из металла марки «Ferac» (чугун высокой крепости) для давлений пара до 250 англо-фунтов при температуре до 500° Фаренгейта. Для котельных установок Edward изготовляет невозвратные клапаны, продувные краны и приемные клапаны. Каталоги высылаются по запросу.

Para servicio rudo, las válvulas Edward de acero forjado al martinete, se pueden obtener en gran variedad de tamaños, tipos y presiones. Materiales cuidadosamente elegidos que satisfacen las exigencias de altas presiones, altas temperaturas condiciones corrocivas. Los detalles en los diseños han sido cuidadosamente estudiados durante años de experiencias fundamentales en el campo. Además las válvulas de ángelo o de globo y las válvulas de retención se ofrecen en los modelos de globo y de émbolo, también las válvulas de comunicación de acero forjado y válvulas de manómetros y otros instrumentos.

Las operaciones de manufactura Edward se conducen bajo vigilancia extricta. Antes de las inspección cuidadosa de todas las operaciones mecánicas, cada una de las barras de acero se sujeta al examen de laboratorio. Las pruebas después del tratamiento térmico se hacen para asegurar las condiciones de estructura granular tan ecenciales para la larga duración y servicio de confianza. La empaquetadura "Evalpak" resiste las condiciones de las altas temperaturas.

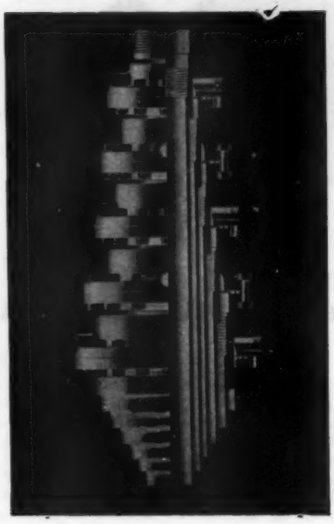
Además de las válvulas pequeñas de acero forjado para refinerias, Edward tambien ofrece válvulas de acero colado en los tamaños más grandes, en la serie de normas americanas de presiones, desde 300 hasta 1500 libras wsp., y "Ferac" (hierro vaciado de alta resistencia) metal para presiones de vapor hasta de 250 libras a 500 grados F. Para la casa de calderas, las especialidades Edward en las válvulas sin regreso, válvulas de seguridad y válvulas de retención en lineas de alimentación. Se envían catálogos a quien los pida.

Pour les travaux pénibles, on peut se procurer les soupapes Edward en acier forgé au martinet, en une grande variété de grandeurs, de modèles et pour pressions différentes. Les matières soigneusement choisies satisfont aux conditions de résistance aux pressions et températures élevées et à la corrosion. Des années d'expérience comme pionniers dans ce domaine ont permis aux fabricants de perfectionner tous les détails de la conception de leurs articles. Outre les soupapes d'arrêt, sphériques et d'angle, nous offrons aussi des soupapes de retenue de type à boulet et de type à piston, ainsi que des soupapes d'échappement et des soupapes de manomètres ou d'instruments, en acier forgé.

Toutes les opérations de fabrication sont soumises au contrôle le plus rigide. Avant l'inspection minutieuse de toutes les opération d'usinage, chaque barre d'acier passe l'examen du laboratoire. On s'assure par des épreuves, après le traitement à chaud, de la structure appropriée du grain, essentielle à la durabilité et à l'infaillibilité en service. La garniture "Evalpak" résiste aux températures élevées.

Outre les petites soupapes en acier forgé pour les raffineries, Edward offre aussi des soupapes en acier fondu dans les grandeurs supérieures, pour série de pressions courantes aux E. U. A. de 300 livres de pression de vapeur par pouce carré à 1500 livres, et en métal "Ferac" (fonte de fer tres résistante) pour pressions de vapeur jusqu'à 250 livres à 500 degrés F. Pour la salle des chaudières, Edward se spécialise dans les soupapes sans retour, soupapes de vidange et soupapes de retenue et d'arrêt pour conduites d'alimentation. Catalogues fournis sur demande.

THE EDWARD VALVE & MFG. CO., Inc.
EAST CHICAGO, INDIANA, U.S.A.



REGAN CONTROL HEAD

For drilling deep wells to control high pressures Regan Forge & Engineering Co. manufacture crown blocks, traveling blocks, casing hooks, rotary swivels, control heads, tubing heads, oil savers and blowout preventers.

The Regan organization is one of the leading manufacturers of heavy-duty crown and traveling blocks. Practically every record-breaking deep well in the world has been equipped with Regan products.

Фирма Regan Forge & Engineering Co изготовляет следующее оборудование, применяемое для бурения глубоких скважин и для контроли высоких давлений: неподвижные талевые блоки, кронблоки, крюки для обсадных труб, сивелы для вращательного бурения, контрольные головки, головки для насосных труб, сальники для скважин и предохранители против выбросов.

Фирма Regan является одной из первоклассных по изготовлению талевых блоков и кронблоков для тяжелых условий работ. Почти все скважины мира рекордной глубины применяли изделия Regan. Фирма имеет большой состав инженеров для оказания помощи клиентам при разработке специального оборудования.

Para la perforación de pozos profundos, para dominar altas presiones, la Regan Forge & Engineering Company fabrica los bloques de corona, los bloques de movimiento, ganchos para los tubos de revestimiento, torniquetes rotatorios, cabezales de gobierno, cabezales de tuberías, economizador de petróleo, y preventivos contra explosiones.

La Organización Regan es una de las manufactureras principales de bloques y otros accesorios para trabajos rudos. Prácticamente todos los pozos sobresalientes que han llegado a las mayores profundidades han estado equipados con los productos Regan. La Compañía tiene un departamento completo de ingeniería para ayudar a los petroleros en el desarrollo de equipos especiales,

Pour le forage de puits profonds, pour le contrôle de hautes pressions, la Regan Forge & Engineering Co. fabrique des blocs de couronne, des blocs mobiles, des crochets de tubage d'isolement, des pivots rotatifs, des têtes régulatrices, des têtes de tubage, des économiseurs de pétrole et des appareils contre les explosions.

L'organisation Regan est un des plus importants fabricants de blocs de couronne et de blocs mobiles pour durs travaux. La presque totalité des puits les plus profonds du monde ont été équipés par Regan. Cette compagnie possède un service technique complet afin de pouvoir aider les entrepreneurs de forage à mettre au point un équippement spécialisé.

REGAN FORGE & ENGINEERING CO.
SAN PEDRO, CALIF., U.S.A.

COFFING HOISTS

The Coffing Hoist operates on the simple ratchet principle. It uses a lever or handle to raise or lower the load.

The hoist can also be used to pull or skid heavy loads without tangling the chain.

Illustrated are two of the six models that we manufacture. Hoists are available in ¾-ton to 6-ton capacities and range in weight from 14 pounds to 65 pounds.

Write for catalogue.

Лебедка Coffing работает по принципу простой трещетки. Под'ем и спуск груза производится рычагом или рукояткой. Этой лебедкой можно пользоваться для перетаскивания тяжелых грузов по земле или на салазках, без опасности запутать цепь. На иллюстрации изображены лебедки двух моделей из общего числа шести моделей изготовляемых нами. Эти лебедки делаются мощностью от ¾ тонны до 6 тонн, причем вес их колеблется от 14 до 65 англо-фунтов. Требуйте наш каталог.

Los montacargas Coffing funcionan según el simple principio del trinquete. Para levantar o bajar las cargas sólo se hace uso de una palanca.

El montacargas se puede usar también para halar o deslizar cargas pesadas sin necesidad de enredar las cadenas. En la ilustración se ven dos de los seis modelos que manufacturamos. Los montacargas disponibles son de ¾ a 6 toneladas y su peso es de 14 a 65 libras. Escriba pidiendo catálogo.

Le Treuil Coffing fonctionne sur le principe simple du rochet. Il fait usage d'un levier ou poignée pour élever ou abaisser la charge. On peut encore employer ce treuil pour tirer ou trainer de lourdes charges sans risquer d'emmêler la chaine. La gravure ci-contre représente deux des six modèles dont nous sommes fabricants. Les treuils Coffing se fabriquent dans des capacités allant de ¾ de tonne à 6onnes, et leur poids peut varier de 14 lbs. à 65 lbs. Demandez-nous notre catalogue correspondant.

COFFING HOIST COMPANY
Danville, Illinois, U.S.A.

LUBRIKUP QUALITY PRODUCTS

Valve Cups in 3 Standard Grades: Hard, Medium, Soft

Type H Seating Cups for Improved Seating Assembly (See Ad.)

STA-PAKT REPACKS FOR ALL MAKES OF INSERT PUMPS

VALVES, SEATING CUPS AND REPACKS

LUBRIKUP COMPANY'S modern daylight factory is devoted exclusively to the manufacture of Valve and Seating Cups and Repacks.

Mechanical and processing equipment is largely of special design to insure the standardized manufacturing conditions necessary for high quality and extreme accuracy.

Laboratory facilities include testing and pumping equipment for checking our products and for development work.

LUBRIKUP Technical Data Sheets supply valuable information on Valve and Seating Cups—yours upon request.

Современный завод фирмы LUBRIKUP COMPANY занят исключительно изготовлением манжет для клапанов и для седел, а также производством набивок.

Почти все оборудование для механических работ и для ведения производства имеет специальную конструкцию. Это обеспечивает стандартность производства, что необходимо для получения изделий высокого качества и точных размеров.

Лаборатория оборудована испытательными приборами и насосными установками, при помощи которых производится проверка изделий и ведутся работы по усовершенствованию таковых.

Требуйте технические данные о манжетах LUBRIKUP для клапанов и седел.

La fábrica moderna llena de luz del día, de la LUBRIKUP COMPANY esta dedisda exclusivamente a la manufactura de Válvulas, Tazas para asientos de valvulas y reempaquetaduras.

El equipo mecánico y los procedimientos están ampliamente destinados para obtener seguramente la manufactura uniffcada, condición necesaria para la alta calidad y extremada exactitud.

Las facilidades del laboratorio incluyen equipos para ensalles y para bombas, equipos para comprobar nuestros productos y para trabajos de desarrollo.

La Carta LUBRIKUP con Datos Tecnicos suministra informes muy valiosos acerca de válvulas y Tazas de Asiento. La enviaremos a quien la pida.

La fabrique moderne inondée de lumière solaire de la LUBRIKUP COMPANY s'occupe exclusivement de la fabrication de soupapes, de cuvettes de siège de soupape et de Garnitures de remplacement.

L'équipement mécanique et les procédés employés visent surtout à assurer des conditions standardisées de fabrication nécessaires pour obtenir une qualité supérieure et une exactitude rigoureuse.

Les facilités de laboratoire comprennent l'équipement d'essais et de pompage pour la vérification de nos produits et pour les travaux de recherche.

Les Feuilles de Données Techniques LUBRIKUP fournissent des renseignements précieux sur les Soupapes et les Cuvettes de Siège de Soupape. Peuvent s'obtenir sur demande.

LUBRIKUP COMPANY, INCORPORATED
208 Rose Street
Williamsport, Pa., U.S.A.
Cable Address: "LUBRIKUP"

HARD METALS AND WELDING RODS

The Stoody Company at Whittier, California, has been serving the major oil companies in the United States and foreign fields for more than ten years. Its entire line of hard metals, welding rods and equipment are designed especially for use in the oil fields.

Since 1927, when the use of Borium produced such startling results in oil well drilling, many new products and applications have been brought out.

The latest developments are Pea, Shape and Tube Borium for electric application, coated Stoodite, Silfram and Self-hardening for better electric applications, Borium sand blast nozzles, and a new type of grinding machine.

Although Stoody products have been adopted by many other industries, further proving the great value of Stoody metals and equipment, the first thought in a new Stoody development or practice is: "How will it benefit the oil industry?"

Фирма STOODY COMPANY, WHITTIER, CALIFORNIA обслуживает более десяти лет нефтепромышленные фирмы Соединенных Штатов и заграничные нефтяные промысла. Все твердые металлы, прутья для сварки и прочее оборудование, изготовляемое этой фирмой, предназначается специально для нужд нефтяных промыслов.

Начиная с 1927 года, когда применение борикума дало такие поразительные результаты при бурении нефтяных скважин, фирма выпустила на рынок большое количество новых продуктов.

К таковым относятся: Борикум в форме бобов и трубчатый Борикум, которые привариваются к инструментам электрическим способом; Студайт и Сульфрам для наварки на инструменты и самозакаливающаяся сталь для приварки электрическим способом; ниппели из Борума для песко-струйных аппаратов и шифоральная машина нового образца.

Продукты фирмы STOODY COMPANY применяются также и в других индустрих, чем еще больше подтверждается их ценность. Однако, при каждом выпуске нового продукта первой мыслью фирмы является: «Поскольку продукт будет полезен для нефтяной промышленности».

La Stoody Company en Whittier, California ha estado sirviendo por más de diez años a las compañías más grandes de petróleo de los Estados Unidos y de paises extranjeros. Su surtido completo de metales duros y varillas soldadoras y equipos están hechos especialmente para servir en los campos de petróleo.

Desde 1927, cuando se hizo uso del Borio, produjo tan sorprendentes resultados en las perforaciones de pozos de petroleo, que muchos nuevos productos y aplicaciones han salido a luz.

Los productos más recientes son: formas y tubos de Borio para aplicación eléctrica, revestimientos de Stoodite, Silfrana y de endurecimiento automático para las mejores aplicaciones eléctricas. Empalmes y boquillas de Borio para chorros de arena a presión y un nuevo tipo de máquina afiladora.

No obstante que los productos Stoody han sido adtoptados por otras muchas industrias, el primer pensamiento de los nuevos desarrollos y prácticas Stoody, ulteriormente, han comprobado el gran valor de los metalles Stoody en: "Como beneficiar la industria del petróleo."

La Stoody Company à Whittier, Californie, sert les plus importantes compagnies pétrolifères des Etats-Unis et de l'étranger depuis plus de dix ans. Sa collection entière de métaux durs, de baguettes à souder et d'équipment est constituée spécialement en vue de l'emploi sur les champs pétrolifères.

Depuis 1927, date à laquelle l'emploi du Borium commençait à donner des résultats surprenants dans le forage des puits pétrolifères, de nombreaux produits nouveaux et applications nouvelles ont vu le jour.

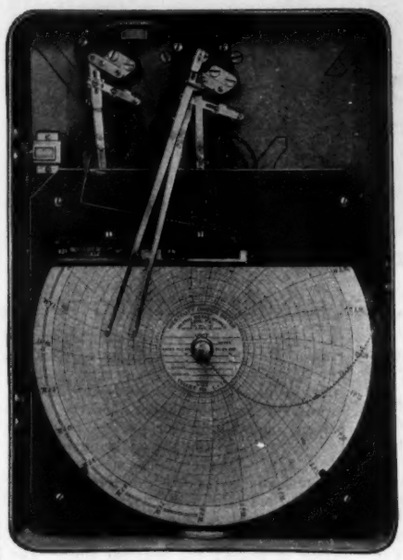
Les produits récemment mis au point comprennent les formes et les tubes de Borium pour les emplois électriques, les revêtement de Stoodite, de Silfram et auto-trempants pour les applications électriques supérieures, les tuyères à sable en borium et un nouveau modèle de machine à meuler.

Bien que les produits Stoody aient été adoptés par un grand nombre d'autres industries, ce qui fait ressortir encore davantage la grande valeur représentée par les métaux et l'équippement Stoody, la pensée qui ne cesse de dominer la mise Stoody est toujours: "En quoi ce produit bénéau point et l'application de nouveaux produits ficiera-t-il l'industrie pétrolifère?"

STOODY COMPANY
WHITTIER, CALIF., U.S.A.

AUTOMATIC INTEGRATING METERS AND DEVICES

The entire history of American Meter Company has been devoted to providing accurate measurement of volumes as minute as the smallest gas pilot light's flow . . and maintaining that degree of accuracy through the entire range of applications.



Integrating Orifice Meter With Cover Removed

American Meter Company has pioneered in both displacement and orifice measurement. It is known throughout the world for its integrating meters which give totalized readings of the quantity of gas, steam, air, oil, water and other liquids passing through the line, automatically computing the flow at the proper factors for pressure, temperature, etc.

These integrating devices include:

INTEGRATING ORIFICE METERS which automatically compute the metered volume for variation in pressure and rate of flow. The index totalizes the quantity for all rates of flow and variations in pressure. The chart gives a continuous record of rates of flow and pressure.

INTEGRATING FLOW METERS operate on the same principle, but at constant pressure.

BASE PRESSURE INDEXES, for displacement meters, automatically multiply the volume at pipe line conditions by the proper pressure factor.

BASE VOLUME INDEXES register the quantity at standard conditions of base temperature as well as base pressure.

Вся история фирмы American Meter Company была посвящена созданию счетчиков для аккуратного измерения объемов протекающего газа, начиная от таких крошечных количеств, какие необходимы для поддержания самого маленького огонька... и, с той же степенью аккуратности, до любых количеств встречающихся на практике.

Фирма American Meter Company была пионером по счетчикам обоих типов, как работающих объемными вытеснениями, так и счетчиков с отверстием (Orifice). Эта фирма известна по всему миру своими интегрирующими счетчиками, которые дают суммарные показания количеств газа, пара, воздуха, нефти, воды или других жидкостей, протекающих по трубе, автоматически подсчитывая таковые для определенных давлений, температур и проч.

К интегрирующим инструментам, изготовляемым фирмой, относятся:

ИНТЕГРИРУЮЩИЕ СЧЕТЧИКИ С ОТВЕРСТИЕМ (INTERGATING ORIFICE METERS), которые автоматически подсчитывают пропущенные объемы при изменяющихся давлениях и разных количествах. Таблица дает суммарные цифры для любых объемов и разных давлений. На диаграмме бланка получается непрерывная запись объемов и давлений.

ИНТЕГРИРУЮЩИЕ СЧЕТЧИКИ (INTEGRATING FLOWMETERS) работают по тому же принципу, но при постоянном давлении.

ТАБЛИЦЫ ДЛЯ ПОПРАВОК НА ДАВЛЕНИЕ (BASE PRESSURE INDEXES) применяются при счетчиках, работающих объемным вытеснением и автоматически умножают объем, указанный при условиях существующих в данной линии, на коэффициент дающий поправку на правильное давление.

ТАБЛИЦЫ ДЛЯ ОБЪЕМНЫХ ПОПРАВОК (BASE VOLUME INDEXES) регистрируют объем при нормальных условиях основных температур, а также основных давлений.

Технический бюллетень этих приборов высылается по требованию.

La American Meter Company, desde su fundación, se ha dedicado a construir instrumentos de precisa medición de volúmenes, hasta los más insignificantes, como son, por ejemplo, las corrientes de gas de la más pequeña luz piloto o mechero, conservando este grado de exactitud en la escala completa de sus aplicaciones.

La American Meter Company ha sido la primera en profundizar los estudios en medición de desplazamiento y orificio. Goza de merecida reputación en todo el mundo por sus contadores integrales, que dan, en exactas cifras totales, la cantidad de gas, vapor, aire, petróleo, agua y otros liquidos, que pasan por una tuberia, computando automáticamente la corriente de acuerdo con los factores de presión, temperatura, etc.

Entre estos interesantes instrumentos se incluyen los siguientes:

CONTADORES INTEGRALES DE ORIFICIO, que computan automáticamente el volumen medido, en lo tocante a variación de presión y régimen de corriente. El índice totaliza la cantidad para todas las velocidades de corriente y variaciones de presión. La cartilla da un registro continuo del movimiento de la corricnte y de la presión.

CONTADORES DE CORRIENTE INTEGRALES. Estos instrumentos funcionan sobre el mismo principio científico, pero a presión constante.

INDICES BASICOS DE PRESION, para contadores de desplazamiento, que multiplican automáticamente el volúmen en la linea o tuberia, por el debido factor de presión.

INDICES BASICOS DE VOLUMEN, para registrar las condiciones normales de la temperatura y de la presión básicas.

A solicitud enviaremos boletines técnicos sobre estos instrumentos, a los interesados, que los pidan.

La American Meter Company a consacré toute son existence à fournir des mesures précises de volumes aussi minimes que le débit de la veilleuse la plus petite . . . et à maintenir le même degré de précision dans toute la gamme des diverses applications.

Elle est un des pionniers dans le domaine de la mesure des déplacements et aux orifices. Elle est célèbre dans le monde entier pour ses compteurs intégrateurs qui fournissent une indication totalisée des quantités de gaz, de vapeur, d'air, d'huile, de pétrole, d'eau et d'autres liquides passant par la conduite, calculant automatiquement le débit en fonction des facteurs appropriés de pression, température, etc.

Ces dispositifs intégrateurs comprennent:

Les COMPTEURS INTÉGRATEURS D'ORIFICES qui calculent automatiquement le volume compté, selon la variation de la pression et le débit du courant. L'index totalise la quantité pour tous les débits de courant et toutes les variations de pression. La carte donne un enregistrement continu du debit de courant et de la pression.

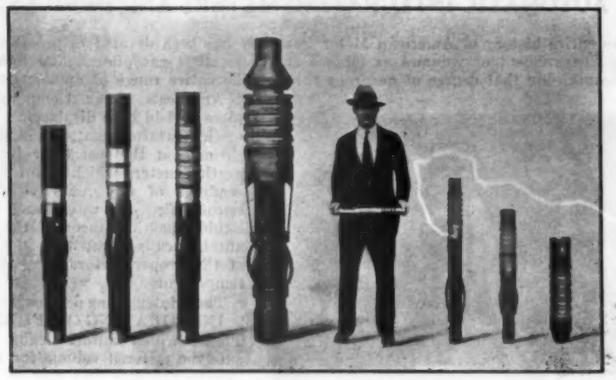
Les COMPTEURS D'ECOULEMENT INTÉGRATEURS qui fonctionnent sur le même principe mais à pression constante.

Les INDEX ou INDICATEURS DE PRESSION DE BASE, pour les compteurs de déplacement, qui multiplient automatiquement le volume aux conditions prévalent dans la conduite par le facteur de pression approprié.

Les INDEX ou INDICATEURS DE VOLUME DE BASE qui enregistrent la quantité aux conditions courantes de température de base ainsi que de pression de base.

Bulletins techniques concernant ces dispositifs envoyés sur demande.

AMERICAN METER COMPANY
INCORPORATED
ESTABLISHED 1836
60 East 42nd Street
New York, U.S.A.



LANE-WELLS PACKERS, LINER HANGERS, SETTING TOOLS

The Lane-Wells Co., Engineers & Manufacturers, offers a complete line of Packers and Liner Hangers in types to meet almost any condition encountered in both drilling and producing wells, where a packer should be used.

They are furnished to pack between tubing and casing, casing and casing, tubing and formation, and casing and formation, in four basic types: (1) Hook-wall; (2) Bottom-hole; (3) Anchor; and (4) Rat-hole.

The exclusive Lane-Wells Ring Packing Assembly consists of multiple rings built of many layers of heavy, graphite-impregnated, bias-cut canvas, moulded over and around a live rubber core, these rings alternating with metal expansion rings. This assembly eliminates all danger of vulcanizing to the casing, and assures a positive seal. . . . Other sleeves, or assemblies, of rubber, canvas, lead, belting or other materials are furnished to meet individual requirements. . . . Plain Liner Hangers, also, are furnished.

The Lane-Wells Liner Setting and Resetting Tool allows the use of a threaded joint as a releasable connection providing adequate strength to insure complete safety in setting the heaviest liner. The tool is packed, assuring positive circulation into the liner, and is threaded to permit the use of tubing below it for washing purposes.

The Lane-Wells Co. is also the developer and operator of the Lane-Wells Gun Perforator and Magnetic Fishing Services.

Инженерно-заводская фирма LANE-WELLS CO. изготовляет комплектный и разнообразный набор пакеров и насосных подвесок, отвечающих почти всем условиям, какие встречаются при бурении и при эксплоатации скважин, при которых необходимы пакеры.

Эти пакеры изготовляются для установки между насосными и обсадными трубами, между обсадными и обсадными трубами, между насосными трубами и грунтом, а также между обсадными трубами и грунтом. Они бывают четырех основных типов: 1) Hook-wall; 2) Bottom-hole; 3) Anchor и 4) Rat-Hole.

Комплектная кольцевая набивка Lane-Wells состоит из многочисленных колец, сделанных из многих слоев тяжелой парусины, пропитанной графитом и заформованных над и вокруг резинового сердечника. Эти кольца чередуются с металлическими расширяющимися кольцами. Такая сборка исключает какую-либо опасность вулканизации в обсадных трубах и создает надежный запор. Фирма также изготовляет и другие манжеты и набивки, собранные из резины, парусины, свинца, ремней или других материалов, в зависимости от индивидуальных потребностей. Кроме того, фирма изготовляет простые подвески для глубоких насосов.

Инструмент Lane-Wells для установки и для перестановки глубоких насосов позволяет применять соединения на резьбе, что дает надежное скрепление, обладающее достаточной крепостью для безопасной установки самых тяжелых насосов. При установке инструмента обеспечивается свободный проток жидкости в насос, а резьба на инструменте дает возможность привернуть к нему снизу насосные трубы для промывочных целей.

Фирма Lane-Wells также разработала специальную пушку Lane-Wells для перфорирования труб, и магнитный ловильный инструмент, каковыми аппаратами она также и оперирует.

La Lane-Wells Co., ingenieros y fabricantes, ofrecen un surtido completo de empacadores y sujetadores de forros en tipos para satisfacer casi todas las condiciones que se encuentran en la producción y explotación de pozos petrolíferos, donde hay necesidad de emplear semejantes equipos.

Estos productos se suministran para empacar entre la tubería y la cubierta, entre cubierta y cubierta, entre tubería y formación y entre cubierta y formación, ofreciéndose en cuatro tipos principales: (1) pared de gancho, (2) hoyo de fondo, (3) ancla y (4) agujero de ratón.

El exclusivo grupo de empaquetadura anular Lane-Wells consta de anillos múltiples construídos de varias capas de lona gruesa grafitada y cortada al sesgo, moldeada alrededor de un núcleo de caucho elástico. Estos anillos se alternan con anillos metálicos de expansión. El grupo evita todo peligro de vulcanización a la cubierta y asegura un cierre positivo. Otros grupos o manguitos de caucho, lona, plomo, correaje y otros materiales, se suministran para satisfacer requisitos individuales. También se suministran sujetadores sencillos.

La herramienta de ajuste y reajuste Lane-Wells de canalización permite el empleo de una unión roscada, como una conexión desprendible, que provee adecuada firmeza para asegurar completa seguridad en la instalación de los forros más pesados. La herramienta está bien protegida por empaquetadura, asegurando positiva circulación en la canalización, y está roscada para permitir el uso de una tubería debajo de ella para el servicio de lavado.

La Lane-Wells Co. ha también y puesto en operación el perforador de pistola Lane-Wells y los sistemas magnéticos de pescar del mismo nombre.

La Lane-Wells Co., Ingénieurs et Fabricants, offre un assortiment complet de garnitures et d'attache-canalisations, comprenant une variété suffisante de modèles pour faire face à la quasi-totalité des conditions d'emploi, tant pour le forage proprement dit que pour la mise en exploitation des puits pétrolifères, où il convient de faire usage d'une garniture.

Ces garnitures sont fournies pour garnir entre tubage et revêtement, revêtement et revêtement, tubage et gisement, revêtement et gisement, en quatre types de base : (1) Accroche-paroi; (2) Trou de fond; (3) Ancre; et (4) Trou de rat.

L'ensemble exclusif Lane-Wells de garniture à anneaux consiste d'anneaux multiples constitués par de nombreuses couches superposées de fort canevas, imprégné de graphite et coupé en biais, ce canevas étant moulé sur et autour d'un noyau de caoutchouc natif; ces anneaux sont alternés avec des anneaux métalliques à expansion. Cet ensemble supprime tout danger de vulcanisation du revêtement, et assure un joint d'une étanchéité positive. . . . Il est fourni aussi d'autres manches ou ensembles, en caoutchouc, canevas, plomb, courroie ou autres substances, afin de donner aux exigencies individuelles. . . .

L'Outil Lane-Wells d'Ajustage et de Réajustage de canalisation permet l'emploi d'un joint fileté comme raccord détachable, ce qui assure une force suffisante pour donner toute la sécurité voulue à la mise en place de la canalisation la plus lourde. Cet outil est entouré de garniture, ce qui assure une circulation positive dans la canalisation, et il est fileté afin de permettre l'emploi de tubage au-dessous de son niveau, pour opération de lavage.

La Lane-Wells Co. a aussi créé et mis en service le Perforateur à Pistolet Lane-Wells ainsi que des Systèmes Magnétiques de Repêchage.

THE LANE-WELLS CO.
U. S. A.
Los Angeles - Houston - Tulsa - New York

MILLER SAND PUMP

A combination Oil Well Bailer and Sand Pump with four interchangeable Bottoms—STAR & CHISEL for cutting sand loose, SAND BOTTOM for quickly removing loose material, BAILER BOTTOM when tool is used as a Bailer. The enormous suction created by the plunger traveling upward causes the tool to bring out a full load of sand and mud. The wire line going through the bail permits use of 25 or 30-foot length pumps. These features save time in cleaning out besides increasing the production of the well. In cleaning out equipment the MILLER Sand Pump has established a world wide reputation of service over ten years.

Песочный насос Миллера представляет собою комбинированную желонку и песочный насос. Он имеет четыре взаимозаменяемые нижние части, а именно: крестообразное долото и прямое долото, которые служат для раздробления песчаных пород; песочный клапан для быстрого извлечения раздробленных пород; желоночный клапан для тех случаев, когда этот инструмент применяется как желонка. Ввиду большого вакуума, который образуется при движении поршня вверх, вся желонка наполняется песком и грязью. Благодаря проволочному канату, который проходит через трубу насоса, длину последнего можно довести до 25-ти фут. Эта большая длина ускоряет работу по очистке и увеличивает дебет скважины.

Una combinación de Cuchara de Lodos para pozos de petróleo y Bomba de Arena con fondos intercambeables. Con boca de estrella y de cincel para cortar arena suelta. Fondo de Arena para la remoción rápida de material suelto. Fonde de Cuchara cuando la herramienta se usa como cubo. La enorme aspiración desarrollada por el émbolo en su movimiento ascendente hace que la herramienta saque cargas completas de arena y lodo. El alambre que atraviesa la cuchara permite hacer uso de una bomba de 25 pies. Estos detalles ahorran tiempo y limpieza, y aumentan la producción de los pozos.

Une combinaison d'Ecope à Boues et de Pompe à Sable pour puits pétroliers, avec quatre fonds interchangeables. Ouverture en forme d'étoile et Burin pour entamer le sable, Fond à Sable pour l'enlèvement rapide du sable détaché, Fond à Ecope pour l'emploi de l'instrument comme écope. L'aspiration puissante créée par le mouvement ascendant du plongeur amène l'instrument à entrainer un chargement complet de sable et de boues. Le câble qui traverse l'écope permet d'employer une pompe de 25 pieds. Ces dispositifs épargnent du temps au nettoyage du puits et augmentent le rendement de l'extraction.

MILLER SAND PUMP CO.
General Office and Plant:
SAPULPA, OKLA., U.S.A.

LUNKENHEIMER "KING-CLIP" GATE VALVES

for Steam, Oil, Gas, Air and Gasoline Lines

Fig. 1640
Iron Body Bronze Mounted

Designed to withstand rough usage and to insure long-time, low-cost service, "King-Clip" Gate Valves are particularly adapted for oil field and refinery service.

Iron Body Bronze Mounted and All-Iron patterns are made in three types—Inside Screw, Outside Screw and Quick Opening.

Write for the "King-Clip" booklet No. 504.

Задвижки "King-Clip" спроектированы для тяжелой, продолжительной и экономной работы и особенно пригодны для нефтеперегонных заводов.

Задвижки с чугунным корпусом и бронзовой арматурой, а также чугунные задвижки изготовляются трех типов, — с внутренним винтом, с наружным винтом и смотро-открывающиеся.

Требуйте бюллетень "King-Clip" №504.

Las válvulas de compuerta "King-Clip" están hechas para resitir uso rudo asegurando a la vez, larga duración, coste bajo y servicio eficiente, son adaptables especialmente a los servicios de los campos petrolíferos y de las refinerías.

Tienen el cuerpo de hierro, montaduras de bronce, y todos los modelos de hierro se construyen de tres tipos: De tornillo interno, de tornillo externo, y de apertura rápida.

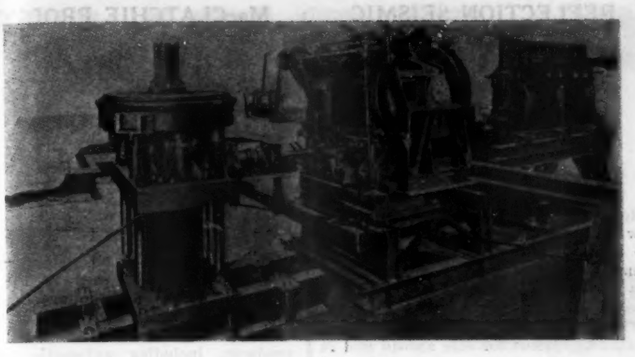
Escríbase pidiendo solleto "King-Clip" 504.

Les vannes "King-Clip" sont construites de manière à résister aux usages durs et à rendre des services économique. de longue durée. Elles sont particulièrement appropiées à l'extraction et au raffinage du pétrole.

Elles possèdent un corps en fer, monté sur bronze, et tous les modèles de fer se fabriquent en trois types: à vis interne, à vis externe et à ouverture rapide.

Demandez-nous le livret "King-Clip" No. 504.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO BOSTON
PHILADELPHIA SAN FRANCISCO
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK



HYDRIL PRESSURE DRILLING SYSTEM

The principle of the Hydril system of pressure control is to counteract the pressure in the formation with greater pressure exerted by pumps from above.

The Hydril system employs external flush joint drill pipe equipped with back pressure valves used through a simple but highly efficient control head containing double packers, either or both of which make constant contact with the pipe while running in, rotating and coming out of the hole. When the tools are out of the hole a drilling valve in the cellar is closed, but pump pressure is still maintained against the formation through a connection below the valve.

When pressures are so great as to require forcing the pipe into the hole and snubbing it when coming out, the Hydril yoke and automatic slips are used, insuring absolute safety to the men and to the well.

Принцип системы Hydril для контроля давлений заключается в том, что давлению, которое существует в скважине, противопоставляют более высокое давление, создаваемое насосами.

При системе Hydril применяют бурильные трубы с гладкими не выступающими наружными муфтами; эти трубы снабжаются уравновешивающими клапанами. Трубы спускаются через простую, но очень надежную контрольную головку, имеющую двойные пакера. Один из этих пакеров, или оба пакера всегда обхватывают бурильные трубы, как при спуске их, так и при вращении и при под'еме. Когда инструменты извлечены из скважины, то задвижка, находящаяся под полом буровой, запирается. Однако давление от насосов продолжает передаваться в скважину через впускное соединение, расположенное ниже задвижки.

Когда давление в скважине настолько велико, что трубы приходится опускать с усилиями и сдерживать их при под'еме, то следует применять вилку Hydril и автоматические зажимные планшки, что абсолютно обеспечивает безопасность рабочего и предотвращает порчу скважины.

El principio del sistema Hydril de control de presión es contrarrestar la presión en la formación, con mayor presión ejercida por las bombas, desde arriba.

El sistema Hydril emplea tubería de unión plana exterior, con válvulas de contrapresión accionadas mediante un sencillo, pero eficaz cabezal de regulación, con dobles empaquetaduras, las cuales, independientemente o separadas, hacen contacto con el tubo mientras viajan, giran y salen del agujero. Cuando las herramientas están afuera del agujero, la válvula de perforación se cierra, pero la presión de la bomba se mantiene todavía contra la formación, por medio de una conexión debajo de la válvula.

Cuando las presions son tan grandes que requieren forzar el tubo en el agujero y afirmarlo cuando se le saca, la horquilla y los patines automáticos Hydril resuelven el problema, con absoluta seguridad para los trabajadores y el pozo.

Le principe du système Hydril de contrôle de la pression consiste à résister à la pression dans la formation au moyen d'une pression plus forte produite par des pompes à la surface.

Le système Hydril emploie du tubage extérieur de forage à joint affleuré muni de soupapes de dégagement commandées par une tête de contrôle simple mais à grande efficacité contenant des garnitures doubles, dont l'un ou les deux assurent un contact permanent avec le tubage pendant l'introduction, la rotation et l'extraction du trou de sondage. Quand les instruments sont hors du puis, une soupape de forage se ferme au fond du trou, mais on continue d'appliquer la pression de la pompe contre la formation au moyen d'un raccord audessous de la soupape.

Quand les pressions sont si grandes qu'il devient nécessaire d'enfoncer le tubage de force dans le trou et de le renfoncer quand il vient à sortir, il convient d'employer l'etrier Hydril et les coulisses automatiques, ce qui assure toute sécurité aux hommes et aux puits.

HYDRIL COMPANY

714 West Tenth St.,
Los Angeles, Calif., U.S.A.

DOHENY STONE DRILL CO. of TEXAS

4300 Calhoun Road,
Houston, Texas, U.S.A.
Cable Address: "HYDRIL"

LINK-BELT ROTARY SPROCKET CHAINS

Link-Belt Company pioneered in the art of chain making, and are today the leading manufacturers of chains for conveying and power transmission purposes.

Link-Belt chains, as illustrated above, are extensively used throughout the oil industry, and the "SS" Class Chains, built to A.P.I. dimensions, provide a suitable chain of correct capacity for any rotary drilling service.

This double >——< arrow trade-mark identifies genuine Link-Belt chains.

The Link-Belt vibrating screen illustrated below, is a simple, rugged unit for reclaiming, degassing and cleaning rotary mud. The result of years of development work, its economy and reliability have been proved by service in the principal oil fields of the world. It has been adopted by most of the major oil companies, as standard equipment. The screen is self-contained, portable, and easily installed in the low head room usually available.

The vibrator shaft of the screen is driven from an electric motor, steam turbine, or gas engine.

Фирма LINK-BELT COMPANY была пионером по изготовлению цепей и в настоящее время она является первенствующим фабрикантом конвеерных цепей и трансмиссионных цепей.

Цепи LINK-BELT, иллюстрированные выше, широко применяются во всей нефтяной промышленности, причем цепи класса "88", размеры которых соответствуют спецификациям A.P.I. (Американского Нефтяного Института), пригодны для любых условий работ, существующих при вращательном бурении.

По этой >——< двухстрелочной торговой марке устанавливается подлинность цепей LINK-BELT.

Вибрирующая сетка LINK-BELT, иллюстрированная ниже, является простым и прочным оборудованием для восстановления и очистки грязевого раствора. Она сконструирована на основании многолетнего опыта и ее экономность и надежность доказаны в действительной работе на крупнейших нефтяных промыслах всего мира. Она применяется как стандартное оборудование большинством крупных нефтяных компаний. Сетка представляет собою вполне собранную машину, которая легко переносится и устанавливается в обычном помещении с низким потолком.

Вал вибратора сетки приводится в движение электромотором, паровой турбиной, или газо-мотором.

La Link-Belt Company, una de las primeras en el arte de fabricar cadenas, es actualmente una de las fábricas más importantes de cadenas empleadas para el transporte de materiales y la transmisión de energía.

Las cadenas Link-Belt, ilustradas aquí arriba, tienen mucha aplicación en toda la industria del petróleo. Las cadenas de la categoría "SS" fabricadas conforme con las dimensiones del A.P.I., constituyen las más adecuadas, por su correcta capacidad, a todo trabajo de perforación rotativo.

La marca de fábrica aquí representada en la forma de una flecha doble >——< garantiza la autenticidad de las cadenas Link-Belt.

El filtro vibrador Link-Belt, que mostramos abajo, es un equipo sencillo y de firme construcción empleado para el tratamiento recuperador, la destilación seca y la limpieza del lodo de rotación. Este aparato es el resultado de muchos años de experiencia. Su funcionamiento económico y de toda confianza ha sido demostrado en servicio práctico en los principales campos petrolíferos del mundo. Ha sido adoptado por casi todas las compañías petroleras importantes, como equipo de norma. Este filtro es completo, portátil y de instalación muy fácil en lugares de muy limitado espacio.

El árbol vibrador del filtro se acciona por un motor eléctrico, turbina a vapor o motor de gas.

La Link-Belt Company, un pionnier dans l'art de fabriquer des chaînes, est actuellement le plus important fabricant de chaines employées en fabrique pour le transport des matériaux et la transmission de l'énergie.

Les chaines Link-Belt, représentées ci-dessus, sont d'un emploi très répandu dans toute l'industrie du pétrole, les chaines de Catégorie "SS", fabriquées conformément aux cotes A. P. I., offrent la chaine par excellence, de calibre convenable, pour tout service de forage rotatif.

La marque de fabrique ci-contre qui représente une flèche >——< garantit l'authenticité des chaines Link-Belt.

Le filtre vibrateur Link-Belt, représente ci-dessous, est un filtre simple et robuste employé pour le traitement récupérateur, la distillation sèche et le nettoyage des boues de rotation. Cet appareil a bénéficié d'une expérience de nombreuses années; son fonctionnement économique et de tout repos a été prouvé en service dans les principaux champs pétrolifères du monde. Il a été adopté par la presque totalité des compagnies pétrolifères d'élite, comme équipement standard. Ce filtre est complet par lui-même, portatif, et d'installation facile, n'ayant habituellement qu'un faible encombrement en hauteur.

L'arbre vibrateur du filtre est actionné par un moteur électrique, une turbine à vapeur ou un moteur à essence.

LINK-BELT COMPANY

Indianapolis, Ind., U.S.A. Philadelphia, Pa., U.S.A.
Export Sales Office: 2680 Woolworth Bldg., New York, N. Y., U.S.A.
Cable and Radio Address: "Linkbelt"

LINK-BELT ROTARY MUD VIBRATING SCREEN

REX DEEPWELL CHABELCO

Rex Deepwell Chabelco Chain is a finely finished all steel chain used on rotary rigs.

REX GROUND PINS are accurately made of special alloy steels, carefully hardened by heat treatment. Ground after hardening to a smooth finish and extremely close tolerances.

REX GROUND BUSHINGS are seamless and hardened. They are ground to exact dimensions. Grinding of pins and bushings gives a smoother bearing surface which means longer wear, and extremely accurate pitch.

REX GROUND, SEAMLESS ROLLERS are made of special alloy steel hardened and toughened to resist wear.

REX SOLID LOCK COTTER, (In Identifying Copper Color) will not rattle loose at high speeds. Their design makes it easy to take down Rex Deepwell Chain in the field and connect up again. (Patent Pending).

REX ALLOY SIDEBARS of tough heat-treated alloy steel are die cut—giving greatest strength and least weight for high speed continuous operation. The pin and bushing holes are machine finished.

THE REX UNIT LINK, made up of these precision finished parts, is assembled by the powerful controlled force of hydraulic pressure. They have force fits at every desired point, but there is no pinching to tighten up the pin at any working surface. The accurately finished and fitted parts will always flex smoothly over the sprockets.

REX DEEPWELL No. 3 is A.P.I.-3 Chain.
REX DEEPWELL No. 4 is A.P.I.-4 Chain.

Цепь REX DEEPWELL CHABELCO изготовлена из стали и тщательно обработана. Она применяется для вращательного бурения нефтяных скважин.

ШЛИФОВАННЫЕ ПАЛЬЦЫ REX изготовлены точно и аккуратно из стали специального сплава и тщательно закалены термической обработкой. После закалки они шлифуются для получения гладкой поверхности и с соблюдением чрезвычайно малых допусков.

ШЛИФОВАННЫЕ ВТУЛКИ REX безшовны и закалены. Они отшлифованы до точных размеров. Шлифовкой пальцев и втулок достигается гладкая поверхность подшипников, а следовательно и более продолжительный срок службы. Такая шлифовка также создает цепь с чрезвычайно точным шагом.

ШЛИФОВАННЫЕ БЕЗШОВНЫЕ РОЛИКИ REX сделаны из стали специального сплава и твердо закалены, чтобы противостоять износу.

ПРОЧНЫЕ ЗАТВОРЫ ЗАМКА REX (они имеют отличительный медный цвет). Эти зазоры не ослабевают при больших скоростях. Благодаря их конструкции, цепь REX DEEPWELL легко раз'единяется в буровой вышке и вновь легко соединяется (патент заявлен).

БОКОВЫЕ ПЛАСТИНКИ REX отштампованы из прочной термически обработанной стали специального состава, — благодаря чему они имеют большую прочность при меньшем весе, что необходимо для новейших методах непрерывного бурения при больших скоростях. Отверстия для пальцев и втулок обработаны на станке.

КОМПЛЕКТНОЕ ЗВЕНО ЦЕПИ REX, составленное из этих точно обработанных частей, собирается сильным гидравлическим давлением, причем сила нажима находится под контролем. В тех местах, где это нужно, части принудительно вдавлены, но нигде на рабочих поверхностях пальцев нет ни зажимов, ни тугих соединений. Аккуратно обработанные и пригнанные части будут за все время работы плавно изгибаться по окружности передаточных шестерен.

ЦЕПЬ REX DEEPWELL № 3 является цепью 1-3 стандарта А. Р. I.

ЦЕПЬ REX DEEPWELL № 4 является цепью 1-4 стандарта А.Р.I. (А.Р.I. означает Американский Нефтяной Институт).

La cadena Rex Chabelco Deepwell, para pozos profundos, es enteramente de acero y de un acabado muy cuidadoso. Se emplea en los aparatos rotativos para la perforación de pozos petrolíferos.

PASADORES ESMERILADOS REX: Se fabrican con suma precisión de especiales aleaciones de acero ye se endurecen mediante un tratamiento térmico exclusivo. Después de templados, se rectifican en amoladoras que les imparte un acabado muy fino y exacto.

BUJES ESMERILADOS REX: Son sin costura y endurecidos. Son también esmerilados a dimensiones exactas. El esmerilado de los pasadores y bujes asegura una superficie de contacto muy conveniente, que se traduce por mayor duración efectiva. Se obtiene también de este modo, una cadena de paso de suma precisión.

RODILLOS REX ESMERILADOS Y SIN COSTURA: Se hacen de especiales aleaciones de acero. Se templan y endurecen para resistir bien el desgaste.

CHAVETA DE CERRADURA REX MACIZA: (En el color de cobre que las identifica). No rechinan ni se aflojan en las grandes velocidades. Su construcción permite desarmar fácilmente la cadena Rex Deepwell en el campo y montarla de nuevo. (Patente pendiente).

BARRAS LATERALES REX DE ALEACIÓN: Se fabrican de especial aleación de acero, de gran tenacidad, y se tratan térmicamente, estampándose en matrices, lo que asegura una resistencia máxima y un peso mínimo, cosa ideal para la explotación moderna continua, sometida a intenso servicio. Los orificios del pasador y del buje se labran a máquina.

EL ESLABON REX: Constituído por estas piezas acabadas con tanta precisión, este eslabón se arma bajo la gran fuerza controlada de la presión hidráulic. Estos eslabones tienen ajestes de frotación dura en todos los puntos convenientes, pero no presentan ningún aprieto que pueda endurecer el moximiento del pasador. Las piezas acabadas y ajustadas con suma precisión siempre pasan con suavidad por los dientes de los engranajes.

REX DEEPWELL No. 3 es la cadena A.P.I. 1-3
REX DEEPWELL No. 4 es la cadena A.P.I. 1-4

La chaine Rex Chabelco Deepwell, pour puits profonds, est une chaine tout acier d'un fini soigné, qui s'emploie sur l'appareillage rotatif dans le forage des puits pétrolifères.

GOUPILLES MEULÉES REX: Elles sont fabriquées avec une haute précision à partir d'aciers d'alliages spéciaux, et soigneusement durcies par un traitement thermique. Après le trempage, elles sont rectifiées à la meule de façon à leur donner un fini uni et à les amener à la cote, selon des tolérances très serrées.

COUSSINETS MEULÉS REX: Ils sont durcis et sans soudure. Ils sont, en outre, meulés exactement à la cote. Le meulage des goupilles et des coussinets assure une surface portante plus régulière, ce qui se traduit par une plus grande durabilité. On obtient aussi, de cette manière, une chaine d'un pas de la plus haute précision.

ROULEAUX REX MEULÉS ET SANS SOUDURE: Ils sont fabriqués à partir d'alliage d'acier spécial, trempé et recuit de façon à résister à l'usure.

CLAVETTE DE VERROUILLAGE REX MASSIVE: (Dans la couleur cuivre identificatrice) Ne se relâchera pas aux grandes vitesses et par suite ne produira pas de bruit de ferraille. Sa construction permet d'emmener facilement la chaine Rex "Deepwell" au champ de pétrole et de la raccorder de nouveau sur place (Brevet en instance).

LONGERONS REX EN ALLIAGE: Ils sont fabriqués à partir d'acier spécial d'une grande ténacité, traité thermiquement, et sont découpés en matrice—ce qui assure un maximum de force et un minimum de poids pour l'exploitation moderne continue en service intense. Les trous de goupille et de palier sont usinés.

LE CHAINON D'ELEMENT REX: Constitué par ces pièces finies avec une grande précision, il est assemblé par la puissante force de contrôle de la pression hydraulique. Ces chainons ont des ajustages à frottement dur à tous les points désirables, mais ils ne présentent aucun pinçage pouvant serrer la goupille à toute surface de travail. Les pièces finies et ajustées avec une haute précision ne manquent jamais de fléchir au passage sur les pignons.

REX DEEPWELL No. 3 est la chine A.P.I. 1-3
REX DEEPWELL No. 4 est la chaine A.P.I. 1-4

CHAIN BELT COMPANY
MILWAUKEE, WISCONSIN, U.S.A.

REFLECTION SEISMIC SERVICE

Reflection seismic work being conducted now in Rumania, Poland, France and at the South Pole with equipment and personnel thoroughly trained and tested by this company in their widespread activities in the United States oil fields.

The Company manufactures complete seismic equipment for sale abroad and in U. S., as well as contracting services of full parties with technical supervision of all seismic or other geophysical problems. A research laboratory and manufacturing plant is maintained in Tulsa, Oklahoma. Specially designed equipment was built for the Byrd Antarctic Expedition and is now being operated by one of the Seismograph Service Corporation engineers with the Expedition.

В настоящее время в Румынии, Польше, Франции и на Южном Полюсе производятся научные обследования подземных геологических структур при помощи сейсмографов. Эти работы ведутся аппаратами и работниками фирмы Seismograph Service Corporation, получившими большой опыт и испытанными во время обширных работ, производимых ими на нефтяных промыслах Соединенных Штатов.

Фирма изготовляет комплектное оборудование для сейсмографических работ и продает их в Соединенных Штатах и заграницу, также заключает контракты по техническому руководству сейсмографическими обследованиями и по разрешению других геофизических проблем. Исследовательская лаборатория и завод фирмы находятся в гор. Tulsa, Oklahoma. Фирма изготовила аппараты для экспедиции Byrd'a на Южный Полюс и этими аппаратами в настоящее время работает один из инженеров Seismograph Service Corporation, который находится в экспедиции.

Los estudios de reflexiones sísmicas emprendidos en Rumania, Polonia, Francia y en el polo sur, se están llevando a cabo con equipo y personal adiestrado de esta compañía, la cual cuenta con vasta experiencia, dadas sus extensas actividades en los yacimientos petrolíferos en los Estados Unidos.

Esta compañía fabrica un completo equipo sísmico, para su venta en el país y el extranjero, y se encarga, bajo contrato, de dar un servicio completo, supervigilando todos los problemas sísmicos y otros de caracter geofísicos que se presenten. Mantiene un laboratorio de investigaciones y fábrica manufacturera en Tulsa, Oklahoma, E. U. A. Construyó un equipo especial para la Expedición Antártica Byrd, el cual está ahora a cargo de ingenieros de la Seismograph Service Corporation delegados para su manejo.

Les études de réflexions simiques entreprises actuellement en Roumanie, Pologne, France et au Pôle Sud, sont conduites avec un équipement et un personnel entrainé et éprouvé à fond par cette compagnie, au cours de leurs travaux extensifs prospection pétrolière aux Etats-Unis.

Cette compagnie fabrique un équipement sismique complet pour vente aux Etats-Unis et à l'étranger, et se charge, sur contrat, de donner un service complet, consistant de la direction technique de tous les problèmes sismiques et autres problèmes géophysiques. Un laboratoire de recherches et une fabrique en cours d'opération sont conduits par cette compagnie à Tulsa, Oklahoma. Elle a aussi construit un équipement spécial pour l'Expédition Antartique de Byrd, actuellement en service avec l'expédition sous la direction d'un des ingénieurs de la "Seismograph Service Corporation" qui fait partie de l'expédition.

SEISMOGRAPH SERVICE CORPORATION
TULSA, OKLAHOMA, U.S.A.

MacCLATCHIE PRODUCTS

A new catalog of oil field equipment has recently been issued by the MacClatchie Manufacturing Co. This book contains specifications and illustrations of the complete line of MacClatchie products, including automatic rotating blowout preventers, reamers and underreamers, mud pump valves, pistons, and liner pullers, quick change cementing heads, automatic catheads, flow nipples, stop cocks, quick unions, geared brakes for draw-works, and the new "Hydro Seal" plug valves. Copies of this catalog may be secured without cost from the MacClatchie Mfg. Co., Compton, Calif., U. S. A.

Фирма MacClatchie Manufacturing Co. выпустила недавно новый каталог оборудования для нефтяных промыслов. В этом каталоге имеются спецификации и иллюстрации всех продуктов MacClatchie, включая автоматические вращающиеся предохранители против выбросов, римеры и расширители, клапаны грязевых насосов, поршни, вытягиватели цилиндровых рубашек быстро сменяющиеся цементирующие головки, автоматические головки для работы оттяжкей, ниппели, продувные краны, быстро схватывающие соединительные муфты, тормаза с шестернями для бурильных лебедок и новые клапаны "Hydro Seal" (с гидравлическим запором). Экземпляры этого каталога могут быть получены бесплатно у MacClatchie Manufacturing Co., Compton, Calif., U. S. A.

La MacClatchie Manufacturing Co., acaba de publicar un nuevo catálogo de equipos para la explotación de yacimientos petrolíferos. Este catálogo contiene las especificaciones e ilustraciones del surtido completo ofrecido por la MacClatchie, que comprende dispositivos automáticos y rotativos para la prevención de explosiones, escariadores diversos, válvulas para bombas de lodo o cieno, émbolos y accesorios de tracción por cable, cabezas de cementación de cambio rápido, conexiones de flujo, grifos de cierre, uniones rápidas, frenos de engranaje para instalaciones de tracción y las nuevas válvulas cónicas "Hydro Seal". Escribiendo a la MacClatchie Mfg. Co., Compton, California, E. U. A., podrá Ud. obtener ejemplar gratuito de este catálogo.

Un nouveau catalogue d'equipement pour exploitation de champs pétrolifères a été récemment publié par la MacClatchie Manufacturing Co. Ce catalogue contient les spécifications et illustrations de l'assortiment complet offert par Macqui comprend des dispositifs automatiques et rotatifs de prévention des explosions, des aléseurs et sous-aléseurs, des soupapes de pompe à boues, des pistons et des dispositifs de traction à câble, des têtes de cémentation à changement rapide, des têtes porte-lames automatiques, des raccords d'écoulement, des robinets de fermeture, des manchons de raccord rapide, des freins à engrenages pour appareillage de pompage, et les nouvelles soupapes à cônes "Hydro Seal". On peut se procurer gratuitement ce catalogue, en écrivant à la MacClatchie Mfg. Co., Compton, California, U. S. A.

MacCLATCHIE MFG. CO.
COMPTON, CALIF., U.S.A.

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Releasing and Circulating Spear Pat'd

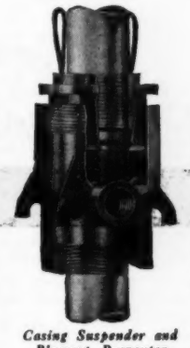
American Releasing and Circulating Spear

Saves you time and money because it is very simple in operation. Has a hollow stem for fluid circulation. The releasing nut slides vertically on the stem and key. The box of the slip is threaded right hand to allow quick, easy release. The spear slip is a solid ring at top end with lower part split for expansion of gripping sections. Mandrel will rotate on stem which minimizes friction in the releasing operation of the spear.

Hose Coupling Pat'd

American Hose Coupling

This boltless hose coupling consists of three wedges, three segments and one coupling or nozzle. Made with a wedge effect, it prevents cutting of hose which is common with most types of clamps. The nozzle is made of steel, treated to withstand a great deal of pressure and cutting. In ordering give inside and outside diameter of hose and if possible the make.



Casing Suspender and Blowout Preventer Patented

American Casing Suspender

Is used in fields where high pressure and several sands are found. Prevents blowouts between strings of casing and allows suspension at any point in hole. Has composition packing that resists salt water. There are four tie down lugs on the sides to use with American Tie Down Flange, or other methods that might be used. Outside thread can be used in case well goes wild. Tested to 5,000 lbs.

Tapered Tap

American Tapered Tap

These tapered taps possess extra strength and toughness, and will even bend before they will break. They are forged from high grade steel that has been especially heat treated. Are designed with a slow, graduated taper for taking a firm hold. American Tapered Taps are made in three steps for catching coupling, pipe and tool joint.

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- Stuffing Boxes for Steam Engine
- Draw Works Braces
- Wild Well Capping Tools
- Automatic Catheads
- Hose Clamps
- Drill Collars
- Sucker Rod Couplings
- Drill Pipe Cutters
- Rat Hole Elevators
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American Flow Packer Pat'd

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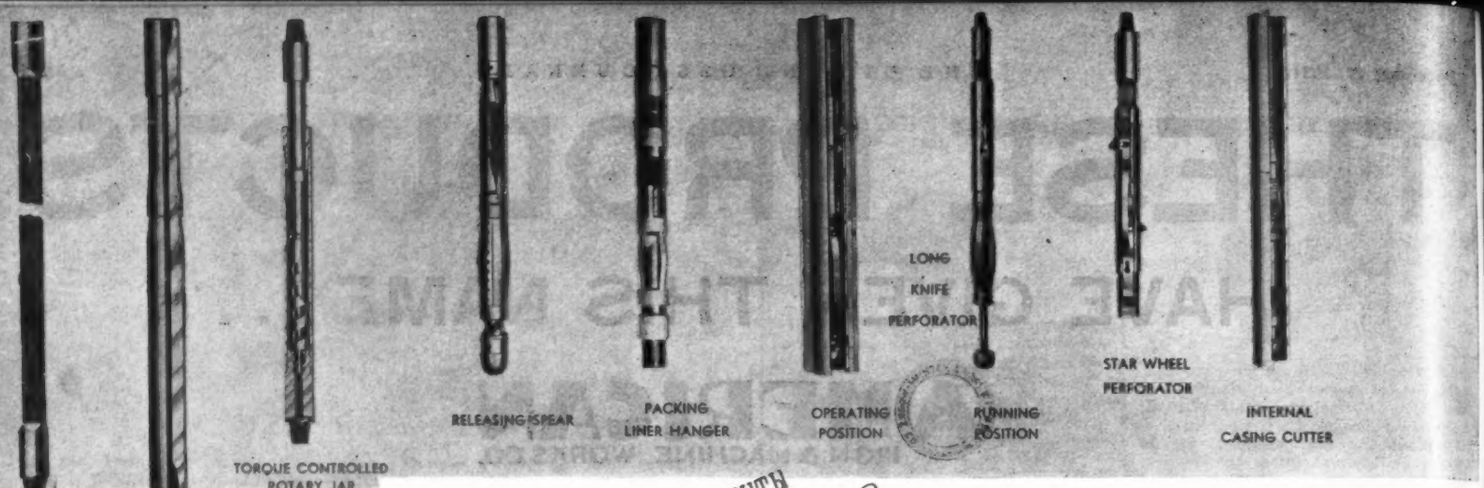

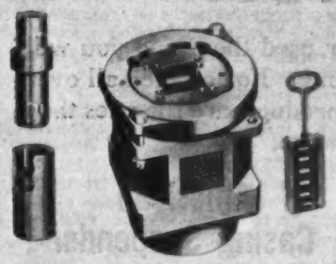

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Three Wildcat Tests in Duval and Bee Counties Give Indications of Opening Up New Fields

SAN ANTONIO, Tex., Dec. 24.—The favorable showings of three wildcat tests, which may open new fields in Duval and Bee Counties, were the featured developments in the Southwest Texas district the past week.

Four miles east of the Government Wells Field, Duval County, Humble Oil & Refining Co.'s No. 1 Ruiz, Survey No. 553, practically assured the county of a new field, when it tested 500 feet of pipe line oil through a three-eighths inch choke on top and bottom, on a 15-minute drill stem test made in sand from 2,785-2,790 feet. The operators are preparing to cement casing. The sand is thought to be the Government Wells sand which produces in the Government Wells Field. A Short distance southwest, Magnolia Petroleum Co.'s No. 1 Herbst made an electrical coring test at 3,280 feet and is coring ahead.

In the northern part of the county, due north of the Government Wells Field, near the McMullen County line, W. C. McBride, Inc.'s No. 2 Hagist has started an extensive leasing and royalty campaign in that part of the county, due to it having cored saturated sand from 2,151-64 feet. The operators lost the testing tool in the hole while attempting to make a drill stem test, and are now fishing.

A test drilled by Cloyes a half mile southeast of this test made about 20 bbls. of oil daily in sand topped at 2,-180 feet and No. 2 Hagist is reported higher on this sand, which makes it appear certain of making some kind of a well. Location is Block 2, Section 265.

The other possible pool opener is Dirks Brothers and others' No. 1 Roth, 2 miles west of the West Tuleta Field, Bee County, which showed for a well on a drill stem test from 3,880-84½ feet, the total depth. On a 15-minute test through a quarter-inch choke on bottom and a five-sixteenths inch choke on top, it tested 8 fourbles of oil with 55 pounds of working pressure. The test is bottomed in the Pettus sand, and it is the opinion of many, that the test will prove a southwest extension to the Pettus townsite field, rather than an extension to the West Tuleta Field.

West Tuleta Field

In the West Tuleta Field, Edwin M. Jones of San Antonio is reported to have purchased 240 acres of United Production Co.'s properties. The acreage involved consists of the N half SE Section 10; S half NE Section 10, and SW NW Section 11; and the NW NW Section 9.

Two more drilling blocks have been assembled in the county, and are due to be tested within the near future.

In the Caesar Field, northwestern part of Bee County, Luling Oil & Gas Co.'s No. 6 B. B. Ruhman, assured the field of its third producer, when it tested 10 fourbles of oil in 30 minutes on a drill stem test from 3,057-68 feet. The first shipment of crude oil from the field was made during the week, through a 4-inch line extending to a loading rack at Burnell, a distance of 4 miles. The field has a daily production of 100 bbls.

Heep Oil Corp.'s No. 4 Welder, in the Sinton Field, San Patricio County, extended the producing limits of the field, when it was completed an estimated 50-bbl. well from a new sand found from 5,880-86 feet. It is making approximately 50 per cent salt water, and is located 4,000 feet east of the discovery well in the J. F. Portillo Survey.

On the Edwards plateau, Kerr County, Evans and others' (Eastland Oil Co.) No. 6 Love has the appearance of making a small well at a total depth of 3,-530 feet. The test encountered a sand in the Pennsylvanian formation while starting to deepen to the Ordovician and the hole started filling with oil. Late in the week the operators swabbed the well a few times which did not lower the oil, and it is now shut down with 1,500 feet of oil in the hole. The casing which was set at 3,065 feet has not been lowered and the hole is open from that point to the total depth. It is estimated that the well will make about 50 bbls. of oil daily, as it is now. The showing is one of the best that has been had in any of the six tests that have been drilled on the Love ranch. It is located midway between No. 1 and No. 2 each of which showed considerable oil, but failed to make a commercial producer.

In the McNeil Field, Live Oak County, Lion Oil & Refining Co.'s No. 2 McNeil, located northeast of the discovery well which tested gas and a small amount of oil last week at a total depth of 6,-038 feet, has been plugged back to 4,300 feet, and the oeprators will perforate the casing and make a test at that depth. This is the horizon from which the discovery well is producing, and was not fully tested when drilling, as the sand was encountered sooner than expected, and coring was not started until the sand was penetrated some distance.

One mile northeast of the discovery well, Coquat and others' No. 1 Little, in the M. M. Shipp Survey, made a 10-minute drill stem test from 4,386-4,-402½ feet and tested 4 feet of mud, cut with oil and 14 fourbles of salt water with a faint show of gas. The wildcat test of W. H. Helmerich and others, No. 1 Cartwright, in the Morris and Seale Survey, has been abandoned at a total depth of 6,001 feet.

Field Becoming Important

Since completion of Highland Oil Co.'s No. 1 Bruni, which extended the producing limits of the West Cole Field 3,000 feet east, this field has the appearance of becoming important. There are now 22 wells producing from the 3,400-foot Conroe or Cockfield sand, and a number of locations are expected to be made in the field following the completion of the extension test. The extension producer is located in Survey 7, and encountered the sand from 3,407-17 feet, the total depth. At last reports the test was making approximately 5 bbls. per hour and considerable gas.

Hall and Hensley have turned 300 acres of their 5,000-acre block near the town of Goliad in Goliad County, to the Wilcox Oil & Gas Co. on which the Wilcox Oil & Gas Co. will drill a 5,500-foot test.

In the Sam Fordyce Field, southwestern Hidalgo County, four new producers were added to the field, Jack Clement's No. 1 Farias, Porcion 39, Block 273, cemented 7-inch casing at 2,774 feet and was still cleaning itself through a one-eighth inch choke, with tubing pressure 300 pounds and 200 pounds shut-in casing pressure. It encountered the sand from 2,796-2,804 feet. Cortez Oil Co.'s No. 1 C. E. Smith, Block 278, Porcion 40, cemented casing at 2,745 feet and was being completed late in the week. It is bottomed at 2,751 feet, with the top of the oil sand encountered at 2,743 feet. Gholson Drilling Co.'s No. 1 Farias, Porcion 39, Share 273, was completed for an initial production of 10 bbls. per hour with 100 pounds working pressure on the tubing. It is flowing through a one-eighth inch choke.

Wildcat Operations in Southwest Texas

Week Ending December 22

BANDERA COUNTY

W. B. Kyle et al's No. 1 Duke, 200 ft. NW line, 150 ft. SW line of J. A. Bennett Sur. No. 7.
Location.

Plateau Oil Co.'s No. 1 Garrison Sur. No. 506, 1,500 ft. from N and 2,700 ft. from E lines of Sur. (3 mi. SW of Medina).
Trying to lower csg.; T.D. 1,235 ft.

BASTROP COUNTY

Jim Harper's No. 1 Harris.
Location.

BEE COUNTY

Atkins & O'Neill's No. 1 M. Woods, 466 ft. from N and E lines of NW Sec. 8.
Spudded.

Dirk Bros.' No. 1 Foley, N cor. of W. L. Foley tract, about 1 mile N of Simras' No. 1 Holzmark.
Moving in machine.

Dirks Bros.' No. 1 Roth, 990 ft. N line, 330 ft. W line of SW Sec. 7.
Cmtd. csg.; T.D. 3,884 ft.

Arthur W. Gray's No. 1 Rutledge, 3,322 ft. from N line, 250 ft. from E line of 200-ac. tract in B. Q. Hadley Sur.
Location.

Cecil Hagan's No. 1 John R. Scott, 1½ mi. NE of Morgan test.
Drlg. 2,950 ft.

R. M. Herod's No. 5 Kimball, 310 ft. from E line, 150 ft. from N line of 110-ac. tract in S. Winship Sur.
Derrick.

Humble O. & R. Co.'s No. 1 Daniel Fox, 7,500 ft. from N line, 3,370 ft. from E line of 1,884-ac. tract in M. Fox Sur.
T.D. 5,667 ft.

Mid-Continent Crude Oil Co.'s No. 3 Kimball (Grayburg area).
P.B. to upper sand; depth not reported.

Morgan et al's No. 1 Demroy, 1 mile N of Morgan's No. 1 Hicks.
Drlg. 3,100 ft.

R. J. Worthington et al's No. 1 Rutledge, 1,000 ft. from N line and 200 ft. from E line of A. Hadley Sur.
T.D. 3,434 ft.; drill pipe twisted off.

BEXAR COUNTY

N. G. Carter's No. 1 Ruiz, western part of county; (work over).
Prepare to test; T.D. 1,710 ft.

Eckert & Stieren's No. 1 Annie I. Terrell, 79.5-ac., 150 ft. E line, 1,500 ft. N line of tract.
S.D. 800 ft.

Florence East's No. 2 Madrigal, 2,970 ft. from S line, 990 ft. from W line of Share B, Salinas grant.
S.D. 75 ft.

C. A. Ingersoll's No. 1 Mann, S of Von Ormy in Rolen Sur.
Moving in.

Jones & Kieffer's No. 1 LaGrane, NW cor. of tract, 210 ft. each way, F. Rolen Sur.
T.D. 165 ft.

Geo. O'Neill et al's No. 1 Salek Cherniarsky, E of Eckert Field.
No report.

Duke Phillips' No. 1 Anna Lieck, 400 ft. S Seguin Road, 12 miles E of San Antonio.
S.D. 270 ft.

R. Y. Walker's No. 1 L. A. Hamilton, 550 ft. SE and NW cor. 1,110 ft. NE of NW line of tract, Blk. 4,007.
Drlg. 1,009 ft.

BROOKS COUNTY

Helmrich & Payne's No. 1 Scott and Hooper, Palo Alto y Guerra grant.
Location.

CALDWELL COUNTY

O. Dawn's No. 1 F. Tiller, 250 ft. from N line, 1,000 ft. from E line of 37-ac. tract, in G. Hinds Sur.
T.D. 2,396 ft.; showing oil and gas; cmtd. csg.

Kurz Oil Co.'s No. 1 Kurz ranch fee, 4,000 ft. SW line, 4,300 ft. SE line of Barnard Kiecamp Sur.
Drlg. 4,081 ft.

F. Meyers' No. 1 Mooney, 260 ft. from road, 330 ft. from middle of SE cor. of 103-ac. tract, Seale Sur.
Rigging up.

Stanley Smith's No. 1 J. C. Copeland, about 4 miles SW of Lockhart and beyond the Mebana Estate.
Setting up machinery.

DUVAL COUNTY

Buffalo-Texas Syndicate's No. 1 Esconas, 2,777 ft. from N line, 1,944 ft. from W line of 930-ac. tract in San Francisco grant.
Drlg. 3,302 ft.

Conway & Buescher's No. 1 Hoffman, 330 ft. NE and SE lines of Sur. 119.
Drlg. 3,403 ft.

Eckert-Peacock et al's No. 1 C. W. Sutherland, 330 ft. N and W lines of SW NE of Sur. 188.
Location.

Grimes et al's No. 1 Fitzsimmons, 300 ft. S line and 150 ft. E line, Sur. 291.
S.D. 1,100 ft.

Humble O. & R. Co.'s No. 1 Ruiz, 2,080 ft. S line, 200 ft. E line Sec. 553, B.S.&F. Sur.
Waiting on cmt. to set; T.D. 2,790 ft.; showed oil.

W. C. McBride's No. 1-A Hagist, 330 ft. from N and E lines of Blk. 2, Sec. 265.
Fishing 2,164 ft.

Stieren Oil Co.'s No. 1 J. P. Philp, 1,650 ft. S line, 990 ft. E line, Sur. 320.
Drlg. 3,126 ft.

Texas Co.'s No. 2 Graham, 990 ft. SE line, 1,650 ft. SW line of Sur. 571.
Drlg. 3,259 ft.

E. R. Thomas' No. 1 Parr, Sec. 26.
Location.

EDWARDS COUNTY

Will Olhausen's No. 1-B Turney, 660 ft. from W line, 1,622 ft. from N line, Sec. 176, C.C.S.D.&R.G.N.G. Sur.
S.D.820 ft.

H. H. Sides' No. 1 Turney, C.C.S.D.&R.G.N.G. Sur. No. 164, 1,220 ft. N line and W line of survey.
Standing 1,010 ft.

Harry Adams' No. 1 Holman, 1,650 ft. N line, 330 ft. from E line, Sec. 22, C.C.S. D.&R.G.N.G. Sur.
S.D. 602 ft.

FAYETTE COUNTY

Clark et al's No. 1 Becker, in townsite of Roundtop.
Location.

Ross Fenton's No. 1 Kasper (263-ac.), 3,-000 ft. NW and SW lines of Thos. Green Sur.
Location.

FRIO COUNTY

W. T. Shoemaker's No. 1 M. Roche, 150 ft. SW cor. of Carl Wenzel Sur. No. 139.
Spudded.

GILLESPIE COUNTY

Ed L. Nixon's No. 3 Lindig, 12,694 ft. S line, 1,333 ft. W line, Maria Josepha Guerra Sur. No. 41, or 6 ft. S of No. 1.
Drlg. 653 ft.

GOLIAD COUNTY

Magnolia Pet. Co.'s No. 1 Albrecht, 660 ft. N line, 330 ft. SW line of J. P. Reid Sur.
Drlg. 3,200 ft.

GUADALUPE COUNTY

J. W. Burrows' No. 1 Beuhring, 1,000 ft. S line, 750 ft. W line of Jos. Clements Sur., SW Darst Creek Field.
Location.

H. H. Weinert et al's No. 1 Sylie Schmidt, Wakefield Sur., E of Kingsbury Field.
Spudded in.

HIDALGO COUNTY

Clay, Spencer & Hood's No. 1 Brooks & Showers, 330 ft. N and E lines of Lot 4, Blk. 12, Por. 79-80.
Rig up.

Kingwood Oil Co.'s No. 1 Baskom, 215 ft. W line, 218 ft. N line of Lot A-23, Blk. 49, Porcion 41.
Location.

Kingwood Oil Co.'s No. 1 Fairbanks, Porcion 64, 10 miles S of McAllen.
Drlg. 1,750 ft.

Maxwell-Young's No. 1 King, 175 ft. N and E lines of Lot 8, Blk. 11.
R.U. to deepen; T.D. 875 ft.

Union Sulphur Co.'s No. 1 John C. Engleman, 400 ft. S and W lines, Lot 8, Blk. 79, Mestenas tract.
Drlg. 6,390 ft.

Downey & Morton's No. 1 Deskam, 450 ft.

(Continued on Page 205)

Paul E. Harralson, assistant head of the land department for the Magnolia Petroleum Co., Dallas

Test May Connect Addis and Cowden Pools; Sweet Oil Strike in McCulloch County

By L. E. BREDBERG
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Dec. 24.—Of greatest interest in West Texas this week was the striking of one bailer of oil per hour at 4,110 and logging an increase at 4,120 feet by Landreth Production Co.'s No. 1 J. Lee Johnson, in Section 47, Block 43, Township 1s, T.&P. Survey, about midway between the Addis and Cowden Pools in Ector County. However, at 4,180 feet it encountered one bailer of water per hour, which halted drilling. Before the water was struck, the hole filled 1,500 feet with oil. The last increase in oil, before water was struck, was from 4,144-49 feet. It will be plugged back to 4,170 feet and probably given a shot and treated with acid.

If this test proves a producer it may lead to connecting the Cowden and Addis pools by production, consequently it is one of the most interesting wildcats drilling at the present time. If the two pools are connected it would prove a field 18 miles in length, the Cowden and Addis pools together now covering an area of about 6 miles in length, but about 12 miles apart.

Cherry and others previously drilled a dry hole to 4,460 feet in the southeast corner of Section 41, Block 42, Township 1s, a little over 2 miles west of the Johnson test, which limits the producing area on that side. Another test was abandoned in the northeast of Section 12, same block and survey, which limits the field in that particular area on the east side.

Another possibility, and a theory upheld by some geologists, is that the Cowden and Addis areas may not be united by production, but another small pool or two may be proven on acreage lying between them, these areas not being continuous. This theory remains to be substantiated or proven false, by later drilling between the pools. Wells in the Cowden and Addis areas have not been as large as wells in many other lime fields in the district, but they may hold up as flush producers over a long period, which would make them especially valuable. Drilling in this sector is costly and it will take a good producer considerable time to pay out.

Pecos County

The new Pecos County discovery of Gulf Production Co., on the White and Baker ranch, about 9 miles west of the Yates Field, is still incomplete. The company is placing the well on the pump at the present total depth of 1,826 feet, preparing to complete it there. This test, in Section 4, Block 207, T. C. Railway Survey, is on the southern line of a solid block held by the company and will cause some immediate offset drilling. It topped a shallow lime pay at 1,824 feet and has been making from one to three bbls. per hour while shut down at 1,826 feet. This test opens the ninth producing area in the county, chief of which is the Yates Field. The Taylor-Link Pool is about 7 or 8 miles west of the new discovery. A pumping test will soon give an idea as to the potentiality of the well. The oil so far produced, has tested 31.0 degrees gravity.

McCulloch County

Another strike of interest on the east side of the West Texas district, was made in a test being drilled for water on the G. R. and W. N. White ranch in northern McCulloch County. Brock and Seward of Brady, were drilling for water, but at around 696 or 698 feet picked up a sand carrying sweet oil that tested 37 degrees gravity. It was shut down at 700 feet to run pipe, and while standing four days produced 94 bbls. of oil. The casing was later pulled and rerun and cemented. Tubing is to be run and a test made of the well, which is sure to make a small producer, opening the first producing area in the county in some time. It is in Section 2, William Dennis Survey, 5½ miles west of Mercury. Crude from the well is being trucked to Carson Refining Co.'s storage at Brady. The pay formation was identified as the Strawn sand, a section of the Pennsylvanian.

Andrews County

Nothing of importance came out of Andrews County this week, but the next 7 or 10-day period should see the completion of two semiwildcats, Honolulu and Llano Oil Co.'s No. 1 Parker, in Section 7, Block A-44, and Humble Oil & Refining Co.'s No. 1 Walker in Section 6, Block A-43. The former is preparing to pump after cleaning out following a 260-quart shot from 4,600-4,724 feet. It was previously plugged back from 4,780 to 4,731 feet to shut off sulphur water. The Walker test is cleaning out after shooting with 420 quarts from 4,270-4,480 feet. It too was plugged back to shut off water from 4,538 to 4,490 feet.

Another test of importance in Andrews County is Humble Oil & Refining Co.'s No. 2 Means, in Section 11, Block A-35, about 1½ miles southwest of the nearest producer in the Means area. It is preparing to make a test from 4,050-4,140 feet. If this test proves a producer it will extend this new area a considerable distance, and make it appear of considerable more importance. Former wells drilled, which there are three on production, were all small, one of them pumping.

Winkler County

Nothing new or important was reported for Winkler County. All eyes are being turned on the sandy lime trend east of the Hendricks Pool where extensions are due to be made in the Sayre-Howe area, and in which a couple of wildcats, between the Howe and Halley discoveries, are located. This area is perhaps the most interesting in the district at present. because of showings made in the tests lying on the trend, and because of its location and the possible length to which it may extend.

L. Hiller and others have spudded a test 1,200 feet from the north and 330 feet from the east lines of Section 26, Block WX, G.C.&S.F. Survey, on the Todd ranch. This is in an area in which Continental Oil Co. and Stanolind Oil & Gas Co. drilled several shallow tests, the latter company getting a 130-bbl. well in Section 28, Block WX, at total depth of 1,461 feet. It topped the pay at 1,460 feet. Stanolind drilled an Ordovician test to the east, in Section 67, Block UV, going to 8,042 feet before plugging back to try and make a producer at saturated horizons found above this depth. These streaks in the lime, however, failed to materialize into more than just good showings and the hole was plugged. The area is about 8 miles south of the World or Powell Pool, Crockett County.

Ordovician Tests

Humble Oil & Refining Co.'s No. 1 Ike Honig, Ordovician test located in Section 38, Block M, G.H.&S.A. Survey, made a 34-minute drill stem test from 6,276-6,312 feet after topping the Ellenburger last week at 6,250 feet, 3,974 feet below sea level. The test showed only 450 feet of mud, and coring was immediately resumed. It is now down below 6,327 feet.

John M. Cooper is preparing to run tubing and make a test of showings logged at intervals between 5,923-73 feet, in his No. 1 Bert Page, another Ordovician test comparatively near the Honig test, Schleicher County. Whether the Page test is still in the Bend series, basal Pennsylvanian, or has reached the Ellenburger, is still controversial.

A small block of leases has been taken about 2 miles northwest of the Dodge-Denman Pool in eastern Howard County, and location has been staked in the SW Section 41, Block 30, T.&P. Survey. Another test is to be drilled about 2 miles farther north, in Section 30 of the same block.

Comparatively few sales of producing properties ever take place, or have taken place in the West Texas district during past years, but a deal was reported this week, in which Penn Oil Co. of Dallas, sold two 40-acre leases in the Grand Falls, southern Ward County area, to Prince Brothers Drilling Co. of Electra, Tex. Each tract contains a producing well. The tracts are in the east quarter of Section 11 and the west quarter of Section 10, both in Block 34, H.&T.C. Survey. Consideration was reported as $50,000.

New Locations

There were 11 locations staked in the district during the week, all but 2 being in producing areas, and 17 tests were completed, only 1 of which was abandoned as dry. This test is M. Haye's No. 2 Proctor. It was given up at a total depth of 2,380 feet. A location in Borden County was abandoned on the Clayton and Johnson ranch, Section 29, Block 32, Township 4n, T.&P. Survey, by Moore Brothers.

Mason Oil Co. of Michigan, is to drill a wildcat in Section 22, Block 35, Township 1, on the Kyle ranch in the northwest part of Loving County.

Atlantic Oil Producing Co. is to drill in Section 11, Block 43, Township 1s, T.&P. Survey, about three-quarters of a mile south of production in the Cowden Pool, Ector County. This is on a trend with the Landreth Production Co.'s No. 1 Johnson test, and will be interesting due to its reaching out from the producing area.

Wildcat Operations in West Texas

Week Ending December 24

ANDREWS COUNTY

Fuhrman Pet. Corp.'s No. 2-B Boner, 440 ft. from N and 1,320 ft. from E, Sec. 25, Blk. A-43.
Rig.

Honolulu and Llano Oil Co.'s No. 1 J. E. Parker, 1,320 ft. from S line and 1,470 ft. from W line of Sec. 7, Blk. A-44, P.S.L. Sur.
Plugged back 4,731 ft.; shot 260 qts. 4,608-4,724 ft.; C.O.

Humble Oil & Ref. Co.'s No. 1 B. S. Walker, 660 ft. from E line and 660 ft. from S line of Sec. 6, Blk. A-43, P.S.L. Sur.
P.B. to 4,490 ft.; 27 bbls. net oil while C.O.

Humble Oil & Ref. Co.'s No. 2 Means, 660 ft. from N and 1,980 ft. from W, Sec. 11, Blk. A-35.
Drlg. 4,100 ft.

Humble Oil & Ref. Co.'s No. 3 Means, 1,980 ft. from S and 3,300 ft. from W, Sec. 4, Blk. C-45.
Set csg. 206 ft.

Stogner et al's No. 1 Richardson, 1,980 ft. N and 660 ft. E, Sec. 4, Blk. A-37, P.S.L. Cellar.

York & Harper's No. 1 Hereford Stock Farms, C Labour 12, League 315, Parmer Co. School Lands.
Rig.

BREWSTER COUNTY

Joiner et al's No. 1 McIntyre, 353 ft. from S, 2,390 ft. from E of Sec. 21, Blk. 352, W. M. Mitchell Sur.
S.D. 3,100 ft.; rigging up rotary.

King & Franklin's No. 1 Gage Est., C Sec. 138, Blk. 22, G.H.&S.A. Sur.
Drlg. 410 ft.

COCHRAN COUNTY

Kelsey's No. 1 Slaughter, C Labour 36, League 150, R.C.S. Lands.
Location.

West Texas Development Co.'s No. 1 Slaughter, near C of Labour 53, League 149, Randall Co. School Lands.
Derrick.

COKE COUNTY

Wm. Hooper's No. 1 Gaston, 240 ft. from S line and 654 ft. from W line of Joseph Sur. No. 11.
S.D. 2,560 ft.

CRANE COUNTY

Strauss' No. 1 Phelps et al, 2,113 ft. from N and 713 ft. from NW Sec. 13, Blk. 31, H.&T.C. Sur.
T.D. 222 ft.; ran. 10-in. csg.

Gulf Prod. Co.'s No. 1 Waddell, C NW NW Sec. 4, Blk. B-27, P.S.L. Sur.
Rig.

Wahlenmaier Pet. Corp.'s No. 1 Kloh, 330 ft. from S and 1,608 ft. from W, Sec. 33, Blk. 43, Twp. 4s, T.&P. Sur.
Material.

CROCKETT COUNTY

L. Hiller et al's No. 1 Todd, 1,200 ft. N and 330 ft. E, Sec. 26, Blk. WX, G.C.& S.F. Sur.
Spudded.

Humble Oil & Ref. Co.'s No. 1 Couch, C NW Sec. 3, Blk. QR, G.C.&S.F. Sur.
Material.

CULBERSON COUNTY

Anderson-Pritchard Oil Corp., Magnolia Pet. Co. et al's No. 1 Borders, 1,255 ft. N and 2,305 ft. from W, Sec. 34, Blk. 69, P.S.L. Sur.
Drlg. 495 ft.

Miller Bros.' No. 1 fee, 1,900 ft. from N and 660 ft. from E line of Sec. 21, Blk. 97, P.S.L. Sur.
S.D. 2,145 ft.

(Continued on Page 202)

WEST TEXAS COMPLETIONS

Borden County

Moore Brothers' No. 1 Clayton and Johnson, location abandoned.

Crane County

Gulf Production Co.'s No. 4-A McElroy, total depth 2,994 ft.; plugged back to 2,900 ft.; shot 210 quarts from 2,731-2,878 ft.; initial production 431 bbls. day.

Ector County

Black and others' No. 1 Connell, top of pay 3,456 ft.; total depth 3,620 ft.; initial production 352 bbls. Gulf Production Co.'s No. 5-B Connell, top of pay 3,475 ft.; total depth 3,700 ft.; shot 320 quarts from 3,426-3,672 ft.; initial production 276 bbls.

Fisher County

Condor Petroleum Corp.'s No. 2 Herring, top of pay 3,096 ft.; total depth 3,110 ft.; initial production 50 bbls. day, swabbing. General Crude Oil Co.'s No. 4 Willingham, top of pay 3,102 ft.; total depth 3,126 ft.; plugged back to 3,116 ft.; initial production 50 bbls. day, pumping.

Pecos County

California Co.'s No. 7 Smith, top of pay 1,380 ft.; total depth 1,425 ft.; initial production 20 bbls. per hour.

Howard County

Continental Oil Co.'s No. 13 Settles,

(Continued on Page 202)

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Skelly Oil
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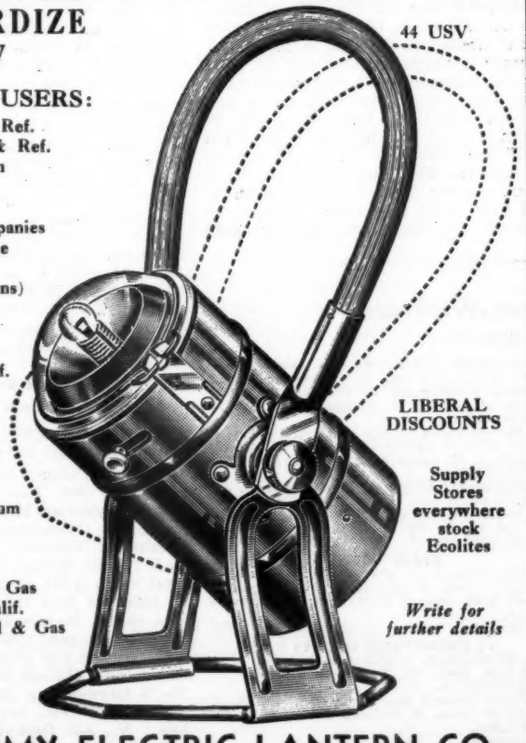

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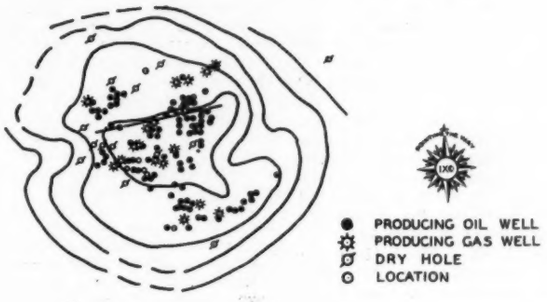

A reflection seismograph structure map made by the

INDEPENDENT EXPLORATION COMPANY

prior to development.

The results of drilling and development following the reflection seismograph survey are shown in conventional fashion.

In two and one-half years of operation, the following predictions of structure, made by the

INDEPENDENT EXPLORATION COMPANY, or the COLORADO GEOPHYSICAL CORPORATION, have been confirmed by subsequent drilling.

LOUISIANA GULF COAST:
* Bosco
* Gillis
Valentine
Welsh

EAST TEXAS:
* Long Lake

WYOMING:
* Quealy
O'Brien Springs

NORTH LOUISIANA:
* Rodessa Extension
* Sligo Extension

TEXAS GULF COAST:
* Van Vleck
* Tomball
* Splendora
* Louise
* Dickinson
* Hastings
* Eureka
* Waller

* Indicates producing oil and gas fields.

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ROCKY MOUNTAIN STATES
610 Midland Savings Bldg., Denver, Colorado

. . . . .

INDEPENDENT EXPLORATION COMPANY
FOREIGN DIVISION
2011 Esperson Building, Houston, Texas

First Well in Trinity River Bed, Anderson County; East Texas Has 76 Completions, 42 Locations

By L. E. BREDBERG

DALLAS, Tex., Dec. 24.—Another shallow test in the Camp Hill area, 7 miles southeast of Palestine has been marked off the drilling report because of proving dry. Dunn and others' No. 1 Cain, in the Thomas Hill Survey, was abandoned at a total depth of 351 feet. This is the third shallow test near the Gulf Production Co.'s No. 1 Davey & Royall, in the M. Rogers Survey, to prove dry. However, one test, Neil McDowell and others' No. 1 Camp, in the J. Swearingen Survey, is still trying to make a producer after having picked up a good showing of oil.

The Gulf test is coring at 6,545 feet, the company intending to carry it to the Georgetown lime for geological information. When that goal is reached it may be plugged back to where it picked up an estimated 50,000,000 feet of gas and completed as a gasser at 5,045 feet.

Normangee Oil Co.'s No. 1 Henry, in the Robert Rogers League, 2½ miles northeast of Normangee, in Leon County, marks off another possible producing area, being dry at a total depth of 2,775 feet.

Trinity State Oil Co.'s No. 1 Trinity River Bed, about 2,000 feet southwest of production in the Cayuga Pool, northwest Anderson County, was completed at a total depth of 4,016 feet, making 220 bbls. of oil in 24 hours through a one-quarter inch choke. This is the first test to be completed in the Trinity River Bed by this company which acquired leases on the bed from the State after the Cayuga Pool was discovered. It proves considerably more acreage.

Wood and others, who drilled in the Rusk discovery in Cherokee County, are to drill in the McNabb Survey, in the Rusk area. So far there has been no other producer completed in the area except the discovery, one test to the southwest having proven dry.

American Liberty Oil Co. has made a tentative location in the C. M. Walters Survey, Henderson County. This county has had innumerable wildcats, several having been drilled during the year, but so far none has proved a producer. One test in the county is now shut down at 4,150 feet and another is skidding derrick after the first hole was junked.

M. Lawson is assembling a block southwest of the Van Field, Van Zandt County, with intention of drilling. Another block is being assembled northwest of the same field by a group of Dallas operators. One Trinity sand test has been drilled on the northwest side of the field by Pure Oil Co., but proved a dry hole, and so far only shallow production has been found north of the field, several shallow tests also proving dry in this area.

Lose Faith in Area

Shell Petroleum Corp. has released a large block north of Brownsboro in Henderson County, operators and companies seemingly having lost faith in many areas in this district which has seen the abandonment of many likely looking wildcat tests during the past year. High prices for leases and royalties, demanded by farmers, now have had their effect in quieting the demand.

An interesting test for Freestone County is to be drilled by W. G. Turbeville and others on the J. S. Ivey tract in the F. B. Hardy Survey, approximately 1½ miles west of the Daniels Oil & Royalty Co.'s No. 1 Ball, which was completed during the middle of the year for a 10,000,000-foot gasser. The new test is about 3 miles south of Turlington, and may prove whether oil may be produced in this area, and if the gas horizon is to be extended that distance west. Lone Star Gas Co. is contemplating laying a line from its Long Lake-McLennan County line, north toward Dallas, the line to pass near the Ball gasser. If the second test in the area proves a gasser the gas company may connect with both and other tests may be drilled here to extend the gas pool.

Gas from the Long Lake Pool, southwest Anderson County, was turned into the Lone Star Gas Co.'s newly laid carrier from the area to its Reisel station in McLennan County, 72 miles to the west, during the week. The gas company has contracted to take 30,000,000 feet of gas per day from the Tide Water Oil Co. and Texas Seaboard Oil Co.'s wells at the present time.

Byrd-Frost, Inc., of Dallas has announced that the company will drill a wildcat on the Pittsburg National Bank tract in the John Parker Survey, Upshur County. This location is north of Jamestown and west of Ore City, several miles northwest of the northern extension of the East Texas Field. It is to go to 4,000 feet or to the Woodbine sand. The company has 2,000 acres in the block to be tested.

EAST TEXAS FIELD

There were 76 completions reported in the East Texas Field but only 42 locations were staked. Thirty-two of the producing wells were comparatively small, while three were completed as swabbers and one completed on air lift. Humble Oil & Refining Co.'s No. 9 Castleberry, in northern Gregg County, overstepped the producing bounds and was abandoned at a total depth of 3,515 feet. One well, Lenhart and others' No. 1 Owens, in the William King Survey, Upshur County, extended production by about 2,000 feet to the north when it appeared as a 75-bbl. per hour well through casing at a total depth of 3,788 feet.

John Lane Drilling Co.'s No. 1 Tyiska, in the R. Wilson Survey, extended production almost one-half mile west and 3,400 feet north of the nearest producer, when it made around 95 bbls. per hour through open tubing. It was cored to 3,832 feet before completing, adding more producing area on the west side of the field in Smith County.

Petroleum Producers Co. and J. S. Bridwell, both of Wichita Falls, have sold their 31-acre W. E. Jones lease, in the G. W. Hooper Survey, Gregg County, including five producing wells, to Atlantic Oil Producing Co. for a reported $240,000 consideration. The purchasing company has long been aggressive in purchasing producing leases in the field. Atlantic Pipe Line Co. has a trunk line to the Gulf Coast serving leases of Atlantic Oil Producing Co. The pipe line company also takes considerable oil from other leases in the field.

COMPLETIONS IN EAST TEXAS

Gregg County.

Atlantic Oil Producing Co.'s No. 2 Hagler, top pay 3,595 feet, total depth 3,613 feet, initial production 157 bbls.; No. 13-A Hughey, top pay 3,572 feet, total depth 3,612 feet, initial production 100 bbls. Barnett's No. 3 Dickson, top pay 3,530 feet, total depth 3,605 feet, initial production 50 bbls. Flanagan's No. 4 Walker, top pay 3,572 feet, total depth 3,586 feet, initial production 80 bbls. Gulf Production Co.'s No. 63 Hilburn, top pay 3,547 feet, total depth 3,600 feet, initial production 70 bbls.; No. 67 Hilburn, top pay 3,552 feet, total depth 3,566 feet, initial production 100 bbls.; No. 17 Muckelroy, top pay 3,552 feet, total depth 3,570 feet, initial production 75 bbls. Magnolia Petroleum Co.'s No. 22 Hicks, top pay 3,656 feet, total depth 3,660 feet, initial production 104 bbls.

Shell Petroleum Corp.'s No. 12-A Bivins, top pay 3,539 feet, total depth 3,586 feet, initial production 56 bbls. Snowden Oil Co.'s No. 1 Bantel, top pay 3,548 feet, total depth 3,568 feet, initial production 20 bbls. per day on air lift. Stanolind-Simms Oil Co.'s No. 2 Miller, top pay 3,554 feet, total depth 3,565 feet, initial production 20 bbls. in 15 minutes through 2-inch tubing. Sultana Oil Co.'s No. 12 Sabine River Bed, top pay 3,514 feet, total depth 3,545 feet, initial production 125 bbls. Texas Co.'s No. 21 Elder, top pay 3,645 feet, total depth 3,670 feet, initial production 25 bbls. in 30 minutes. Tide Water Oil Co.'s No. 9 Beall, top pay 3,642 feet, total depth 3,647 feet, initial production 9 bbls. in 10 minutes; No. 10 Lacy, top pay 3,548 feet, total depth 3,559 feet, initial production 15 bbls. in 10 minutes.

Atlantic Oil Producing Co.'s No. 7 Tuttle, top pay 3,557 feet, total depth 3,638 feet, initial production 140 bbls. Barnsdall-Houston Oil Co.'s No. 17 McGrede, top pay 3,601 feet, total depth 3,627 feet, initial production 90 bbls. F.H.E. Oil Co.'s No. 11 Christian, top pay 3,591 feet, total depth 3,635 feet, initial production 30 bbls. in 30 minutes; No. 3-A Jones, top pay 3,640 feet, total depth 3,678 feet, initial production 35 bbls. in 30 minutes. Fain & McGaha's No. 8 Clements, top pay 3,573 feet, total depth 3,619 feet, initial production 25 bbls. in 15 minutes. Foshee's No. 3 Foshee heirs, top pay 3,642 feet, total depth 3,664 feet, initial production 60 bbls. in 30 minutes. Gulf Production Co.'s No. 21 Fishburn, top pay 3,476 feet, total depth 3,506 feet, initial production 70 bbls. Humble Oil & Refining Co.'s No. 9 Castleberry, dry and abandoned 3,515 feet; No. 33 Hughes, top pay 3,673 feet, total depth 3,693 feet, initial production 58 bbls.; No. 11 Willingham, top pay 3,663 feet, total depth 3,690 feet, initial production 62 bbls.

Jones & O'Brien's No. 5 McHaney & Loeb, top pay 3,525 feet, total depth 3,545 feet, initial production 30 bbls. in 15 minutes. Kewanee Oil & Gas Co.'s No. 19 fee, top pay 3,580 feet, total depth 3,625 feet, initial production 26 bbls. in 15 minutes. Magnolia Petroleum Co.'s No. 8 Allen, top pay 3,680 feet, total depth 3,692 feet, initial production 28 bbls. in 15 minutes; No. 12 Davis, top pay 3,676 feet, total depth 3,596 feet, initial production 120 bbls. Phillips' No. 5-B League, top pay 3,617 feet, total depth 3,625 feet, initial production 54 bbls. Roeser & Pendleton's No. 5 Rodden, top pay 3,538 feet, total depth 3,554 feet, initial production 23 bbls. in 24 minutes. Simms-Stanolind Oil & Gas Co.'s No. 10 Tuttle, top pay 3,548 feet, total depth 3,562 feet, initial production 31 bbls. in 20 minutes.

Stanolind Oil & Gas Co.'s No. 8 Ingram, top pay 3,519 feet, total depth 3,599 feet, initial production 33 bbls. in 23 minutes. Turnbow's No. 2 McGredge, top pay 3,620 feet, total depth 3,662 feet, initial production 32 bbls. in 15 minutes. Yount Lee Oil Co.'s No. 7-B Smith, top pay 3,518 feet, total depth 3,538 feet, initial production 51 bbls. per hour through eleven-sixteenths inch choke; No. 8-B Snoddy, top pay 3,590 feet, total depth 3,610 feet, initial production 60 bbls. per hour through eleven-sixteenths inch choke.

Rusk County

Agey Drilling Co.'s No. 1 Proper, top pay 3,535 feet, total depth 3,620 feet, initial production 100 bbls. in two hours' swabbing. Collins' No. 2 Redwine, top pay 3,482 feet, total depth 3,585 feet, initial production 20 bbls. in two hours' swabbing. Goodnight's No. 3 Frederick, abandoned location. Gulf Production Co.'s No. 31 Turner, top pay 3,768 feet, total depth 3,771 feet, initial production 56 bbls. per hour through three-quarters inch choke. Haynes Drilling Co.'s No. 3 Thrash, top pay 3,725 feet, total depth 3,727 feet, initial production 28 bbls. in 30 minutes. Humble Oil & Refining Co.'s No. 5 Bagwell, top pay 3,722 feet, total depth 3,734 feet, initial production 80 bbls.; No. 8-B Barksdale, top pay 3,552 feet, total depth 3,621 feet, initial production 4 bbls. per hour through eleven-sixteenths inch choke; No. 11 Sneed, top pay 3,745 feet, total depth 3,775 feet,

East Central Texas Wildcats

Week Ending December 22

ANDERSON COUNTY

Gulf Prod. Co.'s No. 1 Dovey & Royall, 330 ft. from NE and NW of 172-ac. tract, M. Rogers Sur.
Coring 5,455 ft.

J. W. Luttes' No. 1 C. McKee, 2,640 ft. from N line of lease and survey and 330 ft. from W line of McKey 800-ac. tract.
Derrick.

Neil & McDowell et al's No. 1 Camp, 395 ft. from S and 150 ft. from E of SE 40 acres in J. Swearingen Sur.
S.D. 387 ft.

Tide Water Oil Co. et al's No. 21-A Wells, 4,079 ft. N and 2,323 ft. W of lease, S. Edmondson Sur. (Trinity test).
Derrick.

BOWIE COUNTY

Tex-Ark. Oil Co.'s No. 1 Hamilton Estate, 600 ft. E and 350 ft. N lines, J. Milan Sur., 4 miles S of Red River.
Rigged up.

CHEROKEE COUNTY

J. B. Daniels' No. 1 Southern Pine Lbr. Co., 4,000 ft. N and 150 ft. W of SE cor. of Thompson Sur.
T.D. 2,443 ft.; to skid derrick.

H. L. Hunt Prod. Co.'s No. 1 Powell Lumber Co., 467 ft. from S and W lines of 52-ac. tract, 1 mile E and one-quarter mile N of discovery well, D. W. McNab Sur.
Location.

Jacksonville O. & G. Co.'s No. 1 H. D. Henderson, 660 ft. from N and W lines of 40-ac. tract out of Tankersley 104-ac. tract, 5 miles NE of Jacksonville on W side of railroad, J. Pineda Sur.
T.D. 752 ft.

E. M. Thomason et al's No. 1 Addis Estate, 250 ft. S of survey and 150 ft. E of railroad, J. T. Jones Sur., 6 miles NW Alto.
S.D. 2,150 ft.

Wilson Stubbs Oil Co.'s No. 1 Rowborts, 450 ft. from S line, 150 ft. from W line of 100-ac. tract, 2 miles SW of Jacksonville, J. D. Wolfin Sur.
S.D. 1,550 ft.

ELLIS COUNTY

Beckner-Finley et al's No. 1 Coker, 2,900 varas along S line of grant from river and 1,700 varas N at R/A, R. De La Pena Sur.
S.D. 527 ft.

FREESTONE COUNTY

Burris' No. 1 R. J. Johnson, NE cor. of a 95.5-ac. tract, W. M. C. Jones Sur.
S.D. 1,000 ft.

Hailey-Young's No. 1 Cochran, 400 ft. N and W lines, D. Bullock Sur., 1 mile SE of Lima.
Location.

GREGG COUNTY

O. T. Clark's No. 1 Williams, 2,100 ft. from S and 2,400 ft. from W of D. Hill Sur.,

(Continued on Page 205)

TITUSVILLE ACME

POWER DRIVEN SLUSH PUMP

★

Powerful . . . Rugged . . . Flexible . . . To Meet All Modern High Pressure Field Conditions

The Titusville Acme has been long recognized as the standard power slush pump of the petroleum world . . . The fluid end is given a 3000 pound test and the power end, including gears, shafts, connecting rods and crossheads, are made amply strong to meet any drilling requirements in any part of the world.

Note the Following Unusual Features:

BUILT TO WITHSTAND HIGH FLUID PRESSURES . . . cylinders, suction and discharge manifold are cast in circular form, avoiding all flat surfaces which cause breakage.

POWER AND PUMPING UNITS INTERCHANGEABLE. These vital parts are cast separately permitting quick and easy replacement at low cost. The fluid end is exactly the same and interchangeable with cylinders.

GREATER PUMPING EFFICIENCY. Suction Valves are lower than pistons and submerged to overcome air pockets . . . provides a powerful lift of the fluid from the slush pits.

EXTRAORDINARY RIGID CONSTRUCTION. Power or main frame is massive and rugged . . . main bearings supported in the bottom of frame directly over skids as well as the sides.

LOCOMOTIVE TYPE CAST STEEL CROSSHEADS . . . provided with round bore guides . . . have adjustable and renewable shoes with large bearing surfaces.

HEAVY PINION AND MAIN SHAFT GEARS made of the best heat treated alloy steel with herringbone teeth to balance thrust. Pinion shaft and crankshaft equipped with heavy duty roller bearings.

EXTRA HEAVY CRANKSHAFT of forged and heat treated chromium vanadium steel . . . ground accurately to size, with cranks set up 90°. Connecting rod of open hearth forged steel with solid end at crosshead.

All moving parts are completely enclosed, oil tight, and large covers are provided for easy access. All parts requiring lubrication operate in an oil bath or in a flood of oil carried by the gear and connecting rod.

Either electric motor, gas or Diesel engines are suitable for motive power and grooved pulleys and V belt drives are recommended for compactness and efficiency.

For complete information,—write for our bulletin describing this remarkable power unit.

★

THE TITUSVILLE IRON WORKS CO., TITUSVILLE, PENNA.

initial production 90 bbls. per hour through eleven-sixteenths inch choke.

Hunt Production Co.'s No. 6 Finney, top pay 3,581 feet, total depth 3,690 feet, initial production 20 bbls. Lyons and others' No. 6 Moore, top pay 3,548 feet, total depth 3,628 feet, initial production 25 bbls. in 40 minutes. Magnolia Petroleum Co.'s No. 5 Deason, top pay 3,659 feet, total depth 3,691 feet, initial production 12 bbls. in 15 minutes. Marathon Oil Co.'s No. 23 Moores, top pay 3,667 feet, total depth 3,750 feet, initial production 16 bbls. in 15 minutes. Perry, Woody and Boller's No. 7 Thrash, top pay 3,615 feet, total depth 3,685 feet, initial production 45 bbls. Snetcher & Pittman's No. 7 Cox, top pay 3,637 feet, total depth 3,700 feet, initial production 60 bbls. Stanolind-Pure Oil Co.'s No. 28 Moores, top pay 3,611 feet, total depth 3,616 feet, initial production 23 bbls. in 20 minutes; No. 48 Siler, top pay 3,588 feet, total depth 3,605 feet, initial production 12 bbls. in 32 minutes.

Chester Wynne's No. 1 Thompson, top pay 3,660 feet, total depth 3,787 feet, initial production 275 bbls. in 3½ hours. Black & Stroube's No. 5 Jernigan, top pay 3,718 feet, total depth 3,750 feet, initial production 25 bbls. in 35 minutes. Bowles' No. 12 Wells, top pay 3,658 feet, total depth 3,672 feet, initial production 20 bbls. E-Tex Oil Co.'s No. 3 Morse, top pay 3,573 feet, total depth 3,618 feet, initial production 80 bbls. in 40 minutes. Gulf Production Co.'s No. 14 Sexton, top pay 3,636 feet, total depth 3,717 feet, initial production 40 bbls. per hour through three-quarters inch choke. Humble Oil & Refining Co.'s No. 145 Crim, top pay 3,621 feet, total depth 3,664 feet, initial production 109 bbls.; No. 147 Crim, top pay 3,662 feet, total depth 3,697 feet, initial production 112 bbls.; No. 151 Crim, top pay 3,598 feet, total depth 3,644 feet, initial production 116 bbls. Kirby Petroleum Co.'s No. 9 Reddic, top pay 3,635 feet, total depth 3,734 feet, initial production 60 bbls.

Lewis & Selby's No. 8 Bean, top pay 3,614 feet, total depth 3,666 feet, initial production 12 bbls. in 15 minutes; No. 9 Bean, top pay 3,603 feet, total depth 3,662 feet, initial production 30 bbls.; No. 7 Pegues, top pay 3,570 feet, total depth 3,626 feet, initial production 80 bbls. Fox Wood's No. 1 Coolidge, top pay 3,610 feet, total depth 3,650 feet, initial production 30 bbls. in 30 minutes. National Oil & Gas Co.'s No. 3 Dixon, top pay 3,620 feet, total depth 3,673 feet, initial production 60 bbls. Navarro Oil Co.'s No. 7 Peterson, top pay 3,645 feet, total depth 3,680 feet, initial production 80 bbls. Vaughn's No. 1 Sexton, top pay 3,598 feet, total depth 3,691 feet, initial production 20 bbls. Abercrombie & Harrison's No. 1 Bowen & Grant, dry and abandoned 1,120 feet.

Smith County

Gulf Production Co.'s No. 11 Stone, top pay 3,797 feet, total depth 3,800 feet, initial production 60 bbls. per hour through three-quarters inch choke. Lane Drilling Co.'s No. 1 Tyeska, top pay 3,830 feet, total depth 3,832 feet, initial production 90 bbls. Stewart & Egan's No. 2 Pace-Bateman, abandoned location. Wainwright-West's No. 5 Cook, top pay 3,709 feet, total depth 3,711 feet, initial production 25 bbls.

Upshur County

Coates and others' No. 1 Williams, top pay 3,590 feet, total depth 3,594 feet, initial production 15 bbls. in 15 minutes. Linhart & Boggers' No. 1 Owens, top pay 3,780 feet, total depth 3,788 feet, initial production 75 bbls. Metaire Oil Corp.'s No. 9 Sheppard, top pay 3,649 feet, total depth 3,668 feet, initial production 70 bbls. Oil, Inc.'s No. 11 Sanders, top pay 3,625 feet, total depth 3,652 feet, initial production 75 bbls. Southland Drilling Co.'s No. 10 O'Byrne, top pay 3,654 feet, total depth 3,664 feet, initial production 35 bbls.

Red River County

Abercrombie & Harrison's Bowen & Grant, dry and abandoned 1,120 feet.

Van Zandt County

Humble Oil & Refining Co.'s No. 1 Fowler, total depth 1,277 feet, initial production 1½ bbls. per day, pumping.

West Texas Fields

(Continued from Page 198)

top of pay 2,268 ft.; total depth 2,400 ft.; initial production 906 bbls. day, pumping.

Jones County

M. Hayes' No. 2 Proctor, dry and abandoned 2,380 ft. Condor Petroleum Corp.'s No. 2 Holt, top of pay 1,896 ft.; total depth 1,905 ft.; initial production 17 bbls.

Upton County

Gulf Production Co.'s No. 106 McElroy, top of pay 2,585 ft.; total depth 2,798 ft.; shot 250 quarts from 2,793-2,630 ft.; initial production 782 bbls. day.

Ward County

Richardson's No. 6 O'Brien, top of pay 3,080 ft.; total depth 3,240 ft.; shot 90 quarts from 3,130-3,075 ft.; initial production 278 bbls.; Eastland Oil Co.'s No. 3 K. Green, top of pay 2,305 ft.; total depth 2,335 ft.; initial production 280 bbls. Sturm and Simms Oil Co.'s No. 3 Jones, top of pay 2,650 ft.; total depth, 3,117 ft.; plugged back to 3,093 ft.; initial production 40 bbls. per day, pumping. California Co.'s No. 17 Durgin, top of pay 2,396 ft.; total depth 2,540 ft.; initial production 363 bbls. day through 1¼-in. tubing; No. 19 Durgin, top of pay 2,426 ft.; total depth 2,593 ft.; initial production 342 bbls. day through 1¼-in. tubing.

Winkler County

Richardson's No. 4-F Scarborough, top of pay 2,851 ft.; total depth 3,325 ft.; initial production 65 bbls. day through one-half-inch choke.

PANHANDLE COMPLETIONS

Gray County

Continental Oil Co.'s No. 9 Finley, top pay 2,896 feet, total depth 3,018 feet, initial production 305 bbls. per day, pumping. Hopkins' No. 2 Henry, top pay 3,213 feet, total depth 3,293 feet, shot with 230 quarts from 3,236-87 feet, initial production 335 bbls. per day, pumping. Magnolia Petroleum Co.'s No. 2 Barrett, top pay 3,205 feet, total depth 3,273 feet, shot with 150 quarts from 3,205-50 feet, initial production 132 bbls. per day, pumping.

Hutchinson County

Sinclair Prairie Oil Co.'s No. 1-D Johnson, total depth 3,150 feet, plugged back to 3,090 feet, initial production 14,200,000 feet of gas. Tripplehorn's No. 3 Ware, top pay 3,008 feet, total depth 3,100 feet, shot with 280 quarts from 2,988-3,100 feet, initial production 241 bbls. per day, pumping.

Wheeler County

Ohio Fuel Oil Co.'s No. 6 D'Spain, top pay 2,410 feet, total depth 2,475 feet, initial production 235 bbls. per day, pumping. Shell Petroleum Corp.'s No. 5 Bush, top pay 2,511 feet, total depth 2,513 feet, initial production 234 bbls. per day, pumping. Smith Brothers' No. 1 Williams, top pay 2,505 feet, total depth 2,551 feet, initial production 703 bbls. with 9,000,000 feet of gas. Texas Co.'s No. 2 Carwile, top pay 2,432 feet, total depth 2,514 feet, initial production 129 bbls. per day, pumping.

COMPLETIONS IN RANGER

Callahan County

Humble Oil & Refining Co.'s No. 1-H Jackson, dry and abandoned 1,327 feet.

Eastland County

Anderson and others' No. 1-A Hogg, top pay 3,109 feet, total depth 3,446 feet, initial production 80,000 feet of gas.

Shackelford County

Dodds and others' No. 2 Alexander, dry and abandoned 925 feet. Gilman & McMurry's No. 1 Blank, total depth 896 feet, initial production 25 bbls. Rhodes & Higher's No. 12 Davis, depth 1,127 feet, shot 10 quarts, initial production 25 bbls. Roeser & Pendleton's No. 18 Morris and Buie, top pay 1,559 feet, total depth 1,595 feet, initial production 25 bbls. Tannehill and others' No. 21-A Matthews, total depth 1,138 feet, shot 20 quarts, initial production 75 bbls.

Throckmorton County

Fleetwood & Pardee's No. 1 Dickie, dry and abandoned 700 feet.

Group 3 Showing How Slow a Thing Can Move

(Continued from Page 54)

plentiful in the spot market at 2½ cents or less. It usually takes 60 days or so of genuine winter weather to make deep enough inroads on these stocks to prompt replenishment in a market where, as at the present time, prices are about a cent higher than those at which the original stocks were bought. Although there has been severe weather, it has not continued long enough to start renewal of storage by the bigger dealers. There has been sufficient demand on the part of buyers with limited storage facilities, however, to maintain a firm spot market for the last several weeks, and indications point to its continuance.

Tending to keep this division of the market from doing its best is the fact that some material bought as prime white distillate, but lacking in point of color and odor, has been finding its way to consuming points, particularly in the Chicago area. This material, while satisfactory as a burning oil for industrial purposes, is unacceptable for domestic use. Some of it has been rejected at destination, with the result in some cases that the buyer was obliged to get rid of it as best he could, taking a loss of three-eighths to one-half cent a gallon. The necessity of throwing this distress material on the market is said to have had an untoward effect on quotations temporarily.

Kerosene was firm, with prices unchanged. Neutrals were steady. Available bright and cylinder stocks were more than adequate to meet demand, but the position of these materials was regarded as satisfactory. Wax was soft.

New Petroleum Register Lists 23,000 Companies

The sixteenth annual edition of The Petroleum Register, an international directory, statistical record and equipment catalog of the oil industry, is ready for distribution.

New features added this year include the complete petroleum code; an organizational chart showing the personnel of the Planning and Coordination Committee; a list of vessels equipped for carrying petroleum products in bulk; an exporters section and a list of marine transportation and lighterage companies.

The register contains 700 pages with information on 23,000 oil companies. A 56-page section gives production statistics of various oil countries since 1857—fuel bunkering stations throughout the world showing kind of oil available and storage capacity—world consumption of petroleum products in 1933—a 16-page section of maps showing oil producing areas in the United States and foreign countries—figures on gasoline production and consumption, imports and exports, refinery output and other tabulations.

The book contains the customary departments, brought up to date. These include the buyers' guide, giving a classified list of equipment used in the oil industry, with names of manufacturers and dealers; a list of refineries and refinery superintendents, lists of refiners, producers, marketers, jobbers, compounders and grease manufacturers, natural gasoline manufacturers, pipe line companies, royalty firms, drilling contractors, petroleum personnel, a foreign section and other topics.

Price of the Petroleum Register is $10, express prepaid. Western distributor for this book is Dudley W. Moore, P. O. Box 1821, Tulsa. Orders for The Petroleum Register from any section of the United States or abroad may be placed through the Book Department of The Oil and Gas Journal, and a copy will be forwarded promptly upon receipt of check or money order for $10. Where no payment accompanies the order the book will be sent express c.o.d.

Sentiment Improving in Chicago Market

(Continued from Page 59)

ing in instructions rapidly, so that movement of all these products has been heavy. Northern state distributors are keeping refiners busy on shipments.

Heavy Oils

The heavy fuels and gas oils continue to attract limited attention. Prices are steady, but little changed. The large consumers are not ordinarily given to building up inventories at year-end and this year is no exception. Some improvement is expected by certain interests later.

Lubricants

Lubricants are still quiet. There is no purchasing of importance, although a certain amount of routine business is being done. Views on coming prices are divergent. Jobbers are cautious buyers of these products.

Naphtha

Naphtha business has been quiet for some time, but the current volume is holding up well. Sellers report they are having little trouble in obtaining their prices for the run of the business.

West Texas Wildcats

(Continued from Page 198)

Wood et al's No. 1 Hall, 250 ft. from S and 85 ft. from E. Sec. 11, Blk. 54½, 16 miles N of Van Horn, P.S.L. Sur.
S.D. 246 ft.

DAWSON COUNTY

Ray Albaugh et al's No. 1 John Robinson, 1,320 ft. from N line, 1,320 ft. from W line of Sec. 46, Blk. M, E.L.R.R. Sur.
S.D. 3,300 ft.

ECTOR COUNTY

Amerada Pet. Co. et al's No. 1 Holt, 1,980 ft. from S and E. Sec. 20, Blk. A.
S.D. 2,990 ft.; elev. 3,055 ft.

Atlantic Oil Prod. Co.'s No. 1 T. P. Land Trust, 440 ft. from N and W of SE Sec. 11, Blk. 43, Twp. 1s, T.&P. Sur.
Set csg. 198 ft.

Harrison et al's No. 3 Addis, 1,650 ft. from N line and 2,200 ft. from W line of Sec. 35, Blk. 43, Twp. 2s, T.&P. Sur.
Drlg. 3,710 ft.

International Pet. Corp.'s No. 1 Cowden, 660 ft. from S and E, Sec. 25, Blk. 44, Twp. 2s, T.&P. Sur.
Location.

Landreth Prod. Co.'s No. 1 Johnson, 440 ft. from N and W, Sec. 47, Blk. 43, Twp. 1s, T.&P. Sur.
Drlg. 4,085 ft.

Landreth Prod. Co.'s No. 1 Clarence Scherbauer, 660 ft. from S and E lines of Sec. 20, Blk. 44, Twp. 1n, T.&P. Sur.
T.D. 4,236 ft.; plugged back to 4,186 ft.; S.D.

Shell Pet. Corp.'s No. 1 Connell, 1,980 ft. from N and 660 ft. from E, Sec. 12, Blk. B-16, P.S.L. Sur.
Drlg. 3,142 ft.

Stanolind Oil & Gas Co.'s No. 8 J. W. Cowden, 440 ft. from S line and 440 ft. from W. line, Sec. 34, Blk. 43, Twp. 1n.
S.D. 280 ft.

Sunray & Llano's No. 2 Jones, 2,310 ft. from N and E, Sec. 6, Blk. 44, Twp. 3s.
T.D. 3,685 ft.; est. 400-bbl. well.

EDWARDS COUNTY

Harry Adams' No. 1 Holman, 1,650 ft. from N and 330 ft. from E, Sec. 22, C.C.S.D. &R.G.N.G. Sur.
Show oil 520-25 ft.; T.D. 602 ft.; trying to shut off water.

EL PASO COUNTY

Mesa Oil Co.'s No. 1 Coronado Valley.
S.D. 1,415 ft.

FISHER COUNTY

Merry Bros. and Perrini's No. 1 Howard, 1,320 ft. from N and 660 ft. from E, Sec. 18, Blk. 2, H.&T.C. Sur.
Drlg. 2,250 ft.

Roeser & Pendleton's No. 2 Hill, 2,310 ft. from N and 330 ft. from E, Sec. 203, B.B.B.&C. Sur.
C.O. 890 ft.

GLASSCOCK COUNTY

Currie et al's No. 1 Currie, 330 ft. from S and W, Sec. 10, Blk. 35, Twp. 4s, T.&P. Sur.
Elev. 2,715 ft.; set csg. 2,350 tf.

John L. Moore et al's No. 1 J. S. McDowell, 1,980 ft. from N line and 660 ft. from E line of Sec. 22, Blk. 34, Twp. 2s, T.&P. Sur.
Drlg. 8,019 ft.

World Oil Co.'s No. 3-C McDowell, 2,310 ft. from N and W, Sec. 21, Blk. 34, Twp. 2s, T.&P. Sur.
Set csg. 2,190 ft.

HOWARD COUNTY

F. H. E. Oil Co.'s No. 2 Dodge, 330 ft. from N and 990 ft. from E, Sec. 15, Blk. 30, Twp. 1s, T.&P. Sur.
T.P. 2,590 ft.; T.D. 2,830 ft.; C.O. 30 ft. off bottom.

Iron Mountain Oil Co.'s No. 1 Read, 330 ft. from E. line, 330 ft. from S line, Sec. 46, Blk. 30, Twp. 1n, T.&P. Sur.
T.D. 2,827 ft.; C.O.

Mixon et al's No. 1 Capps & Lucas, 2,910 ft. from S and 330 ft. from W, Sec. 17, Blk. 29, Twp. 1n, T.&P. Sur.
Drlg. 2,965 ft.

Slagel's No. 1 Foster, 990 ft. from S and 330 ft. from W, Sec. 43, Blk. 29.
Shut down.

IRION COUNTY

Johnson's No. 2 Tankersley, 500 ft. from N and 600 ft. from W, Sub. 722, H. Voelker Sur.
Drlg. 912 ft.

JEFF DAVIS COUNTY

C. M. Joiner's No. 1 Jones & Coffield, 770 ft. from N and 1,322 ft. from E, Sec. 8, Blk. 3, H.&T.C. Sur.
Standard tools.

JONES COUNTY

Campbell et al's No. 1 Enevill, 1,400 ft. from N and 270 ft. from W, Sec. 2, M.E.&P. Sur., ½ mile S of Anson.
Fishing 1,520 ft.

Byram et al's No. 1 McWright, 200 ft. from N and 660 ft. from W of SW Sec. 5, Blk. 15, Twp. 1s, T.&P. Sur.
Drlg. 400 ft.

Dr. C. E. Johnson's No. 1 Young, 1,800 ft. from N and 750 ft. from W of SE 290 acres of B. Travenio Sur.
Drlg. 297 ft.

Richards et al's No. 1 Ransom, 200 ft. from N and E, Sec. 244, B. M. Clopton Sur.
S.D. 750 ft.

Southern Oil Co.'s No. 2 Cade, 330 ft. S and 990 ft. E in Sec. 17, Blk. 19, T.P. Sur.
S.D. 2,400 ft.

LOVING COUNTY

California Co.'s No. 5-A Allen, 1,320 ft. from NE and 2,310 ft. from SE Sec. 90, Blk. 1.
Drlg. 2,300 ft.

D. C. Evans' No. 1 W. D. Johnson, 2,310 ft. from N and 1,650 ft. from W, Sec. 12, Blk. 57, Twp. 1, T.&P. Sur.
S.D. 2,030 ft.; sulphur water.

LYNN COUNTY

Hart Oil Co.'s No. 1 Edwards, 220 ft. from N and 200 ft. from W of SE Sec. 29, L.&S.V. Sur.
S.D. 103 ft.

MARTIN COUNTY

Wright & Scott's No. 1 Flannigan, 330 ft. N and E, Sec. 22, Blk. 37, Twp. 1s, T.&P. Sur.
Rigged up.

MITCHELL COUNTY

Harry Adams' No. 1 Mackey, 1,980 ft. from N and 660 ft. from W, Sec. 13, Blk. 29, Twp. 1n, T.&P. Sur.
Material.

PECOS COUNTY

Gulf Prod. Co.'s No. 3 White & Baker, SE cor. of N half Sec. 4, Block 207, T.C. Ry. Sur.
T.D. 1,826 ft.; flowing 1 to 3 bbls. per hr.; T.P. 1,824 ft.

C. S. Messenger's No. 2 Rand Jones, 1,935 ft. from S line and 1,013 ft. from W line of Sec. 5, Blk. 9, H.&G.N. Sur.
Fishing 2,447 ft.

Shell Pet. Corp.'s No. 1-F Bower-University, 980 ft. from N and 660 ft. from W, Sec. 32, Blk. 16.
Drlg. 565 ft.

Shell Pet. Corp.'s No. 1-A Carlson-University, 660 ft. from N and E, Sec. 36, Blk. 16.
Drlg. 620 ft.

Trans-Tex. Oil Co.'s No. 1 Caldwell, 330 ft. from E line and 330 ft. from S line of Sec. 27, Blk. 40, Twp. 9, T.&P. Sur.
S.D. 1,301 ft.

REAGAN COUNTY

Skelly Oil Co. et al's No. 1-O H. S. Grayson, 1,980 ft. from N line and 660 ft. from W line of Sec. 33, Blk. 8, University Land Sur.
T.D. 9,120 ft.; drill pipe stuck.

REEVES COUNTY

J. E. Cunningham's No. 1 Altman, 2,810 ft. from N line and 1,980 ft. from E line of Sec. 1, C. C. Wyatt Sur.
S.D. 2,456 ft.

Herbert Oil Co.'s No. 1 Williams & Walker, 5,280 ft. from S and 1,320 ft. from E, Sec. 17, Blk. 6, H.&G.N. Sur.
Material.

RUNNELS COUNTY

Dennis et al's No. 1 Wash, 550 ft. from N and 560 ft. from E of W half, Sec. 123, E.T.R.R. Sur.
Spudded and S.D.

Melrose Oil Co.'s No. 1 L. P. Woods, 150 ft. from NE lines and 3,475 ft. from W line of survey, Willett Holmes Sur. No. 100.
Drlg. 2,385 ft.

R. Wells' No. 1 James, 396 ft. from N and 330 ft. from E of James tract in Sec. 16, D. Diaz Sur.
S.D. 1,100 ft.

SCHLEICHER COUNTY

John M. Cooper et al's No. 1 Bert Page, 1,290 ft. from N line, 1,470 ft. from W line of Sec. 40, Blk. L, G.H.&S.A. Sur.
S.O. 5,923-30 ft. and 5,949-52 ft.; S.D. 5,973 ft.; to test at 5,920 ft.

Humble Oil & Ref Co.'s No. 1 Ike Honig, 2,640 ft. from N line and 2,650 ft. from E line of Sec. 38, Blk. M, G.H.&S.A. Sur.
Top Ellenburger 6,248 ft.; D.S. test 6,277-6,317 ft.

W. C. Proctor et al's No. 1 Judkins & Spencer, 1,920 ft. from S and W of W. W. Russell grant.
Standard tools.

SCURRY COUNTY

Coffield & Guthrie's No. 1 Holliday, 2,310 ft. from N and 330 ft. from W, Sec. 120, Blk. 97, H.&T.C. Sur.
Oil and gas 1,785-95 ft.; drlg. 2,040 ft.

McLaughlin's No. 1 Allen, 1,331 ft. from N and 1,338 ft. from E, Sec. 298, Blk. 97.
Crooked hole 375 ft.

STERLING COUNTY

Merry Bros. & Perrini's No. 1 Standsberry, 1,980 ft. from N and E, Sec. 20, Blk. 30, W.&N.W. Sur.
Location.

STONEWALL COUNTY

Merry Bros. and Perrini et al's No. 1 Williams, C SW of SW Sec. 6, Blk. C, A.B. &M. Sur.
Drlg. 3,000 ft.

SUTTON COUNTY

Texas et al's No. 1 Mower, 1,980 ft. from S and W of Sec. 39, Blk. 5, T.W.&N.G. Sur.
Elev. 2,349 ft.; drlg. 1,125 ft.

TAYLOR COUNTY

Dunnigan Bros. et al's No. 3 Hunter, 225 ft. from S and 750 ft. from W, Sub. 14, Willis Sur.
Drlg. 1,412 ft.

TERRELL COUNTY

W. A. Sudderth's No. 1 Phelps, 2,157 ft. from N line and 2,482 ft. from the W line of Sec. 5, Blk. 4-A, G. W. Turley Sur.
T.D. 5,635 ft.

UPTON COUNTY

Gulf Prod. Co.'s No. 103 McElroy, 1,980 ft. from S and 660 ft. from W, Sec. 197, Blk. F, C.C.S.D.&R.G.N.G. Sur.
S.D. 10,978 ft.; csg. pressure 1,265 lbs.; tubing pressure 110 lbs.

King Mountain (Pet. Co.'s No. 1 Sherk, 330 ft. from S and W, Sec. 29, Blk. 1, M.K.&T. Sur.
Drlg. 492 ft.

Williams & Williams Drlg. Co.'s No. 1 Robbins, 1,600 ft. from S and 1,900 ft. from E, Sec. 4, G.C.&S.F. Sur.
S.D. 2,040 ft.

WARD COUNTY

Atlantic Oil Prod. Co.'s No. 1 Miller, 463 ft. from NW and 504 ft. from NE Sec. 3, J. C. Russell Sur.
T.D. 2,430 ft.; testing.

Alexander's No. 1 Richter, 1,650 ft. from NW, 1,170 ft. from NE line of Sec. 27, Blk. 34, H.&T.C. Sur.
S.D. 1,700 ft.

Bradford et al's No. 1 E. R. Allen, 660 ft. from NW line and 551 ft. from NE line, Sec. 11, H.&T.C. Sur.
Fishing 500 ft.

Cook Drlg. Co.'s No. 1 Wood, 330 ft. from NW and SW, Sec. 5, W. F. Stewart Sur.
T.D. 2,548 ft.; testing.

Gulf Prod. Co.'s No. 52 O'Brien.
Drlg. by tools 2,702 ft.

Gulf Prod. Co.'s No. 53 O'Brien.
T.D. 2,768 ft.; hole full oil; C.O.

Postellio & Caprito's No. 1 Purcell, 330 ft from NE and 990 ft. from NW, Sec. 17, Blk. 34, H.&T.C. Sur.
S.D. 2,240 ft.; standardizing.

Rector Oil Co.'s No. 1 Monroe, 660 ft. from SE and NE, Sec. 2, Blk. 1, W.&N.W. Sur
Spudded and S.D.

Sageland Oil Corp.'s No. 2 Pure-Bennett, 1,650 ft. from NW and 2,310 ft. from SW Sec. 16, Blk. 34, H.&T.C. Sur.
Spudded and S.D.

Tex-Mex Pet. Corp.'s No. 1 Pure-Bray, 1,930 ft. from NE and 660 ft. from NW, Sec. 6, Blk. 5, H.&T.C. Sur.
Drlg. 2,730 ft.

West Texas O. & R. Co.'s No. 1-C University, 330 ft. from N and E, Sec. 6, Blk. 16.
Material.

WINKLER COUNTY

Gulf Prod. Co.'s No. 1 Wight, 330 ft. from S and E, Sec. 20, Blk. 40, P.S.L. Sur.
Standard tools.

Harry Adams' No. 2 Scarborough, 990 ft. from N line and 990 ft. from W line, Sec. 2, Blk. 77, P.S.L. Sur.
Location.

Jeffries et al's No. 1 Brown & Altman, 2,310 ft. from S and W, Sec. 6, Blk. B-5.
Drlg. 2,840 ft.

Dr. Jeffries et al's No. 1 Underwood, 330 ft. from S and 2,310 ft. from E, Sec. 26, Blk. B-3.
S.D. 400 ft.

J. C. Maxwell's No. 1 Clapp, 2,310 ft. from N and 330 ft. from E, Sec. 27, Blk. 26, P.S.L. Sur.
Drlg. 2,678 ft.

Maxwell's No. 1 Daugherty.
Drlg. 1,320 ft.

R. S. Mathews et al's No. 1 Evans, 1,320 ft. from N line and 1,320 ft. from W line, Sec. 46, Blk. 73, P.S.L. Sur.
S.D. 110 ft.

Mid-Continent Pet. Corp.'s No. 1 Howe, 2,310 ft. from N and 330 ft. from W, Sec. 12, Blk. 26, P.S.L. Sur.
S.O. 2,373-78 ft.; T.D. 2,394 ft.; tubing stuck.

Richardson's No. 1 Walton, 1,010 ft. from S and 330 ft. from W, Sec. 1, Blk. B-3.
Standard tools.

Sid Richardson's No. 1 Hill, 1,980 ft. from E line, 660 ft. from S line, Sec. 18, Blk. B-11, P.S.L. Sur.
Drlg. 3,737 ft.

Sayre Oil Co.'s No. 1 Leck, 330 ft. from S and E, Sec. 2, Blk. 26, P.S.L. Sur.
Drlg. plug 1,257 ft.

Sayre Oil Co.'s No. 2 Howe, 330 ft. from N and W, Sec. 12, Blk. 26, P.C.L. Sur.
Location.

Skelly Oil Co.'s No. 2 Halley, 1,320 ft. from N and 2,200 ft. from E, Sec. 25, Blk. B-11, P.S.L. Sur.
Drlg. 2,245 ft.

Sinclair Prairie Oil Co.'s No. 1 Cummings, 2,310 ft. from N and 330 ft. from E, Sec. 11, Blk. 26, P.S.L. Sur.
Drlg. 2,972 ft.

Texas Panhandle Wildcats

Week Ending December 24

CARSON COUNTY

McGill's No. 1 Cooper, 330 ft. from S and W of N½ NE Sec. 4, Blk. 9, I.&G.N. Sur.
Top pay 3,030 ft.; T.D. 3,058 ft.; shot, T.P. 2,965 ft.; T.D. 3,058 ft.; putting on pump.

McClintock et al's No. 1 Jordan, 660 ft. N, 413 ft. W Sec. 105, Blk. 4, I.&G.N. Sur.
Rig.

Phillips Pet. Co.'s No. 1 Cooper, 330 ft. S and E, Sec. 4, Blk. 9, I.&G.N. Sur.
Material.

CHILDRESS COUNTY

Humble Oil & Ref. Co.'s No. 1 B. P. Smith, 1,327 ft. from S line and 1,327 ft. from E line of Sec. 27, H.&G.N. Sur., Blk. 9.
Fishing 5,225 ft.

COLLINGSWORTH COUNTY

Andrews & Kerr's No. 1 Gideon-Bell, C NW NE Sec. 6, Blk. 13, H.&G.N. Sur.
S.D. 2,100 ft.; S.G. 1,985-98 ft.

DALLAM COUNTY

Eben Warner's No. 1 Jarbie, 1,520 ft. from S line, 415 ft. from W line, Sec. 2, B.&B. Sur.
S.D. 3,200 ft.; may abandon.

GRAY COUNTY

Irish-American Oil Co.'s No. 1-B Morse, 990 ft. S and 330 ft. E, W½ NE Sec. 54, Blk. 25, H.&G.N. Sur.
Standard tools.

Plains Holding Co.'s No. 1 Morse-Gulf, 330 ft. S and W, Sec. 57, Blk. 25, H.&G.N. Sur.
Cellar.

Stanolind O. & G. Co.'s No. 1 Cutter, 330 ft. N and E, W½ NE Sec. 173, Blk. 3, I.&G.N. Sur.
Location.

Texas Co.'s No. 1-C Taylor, 1,325 ft. from N and 1,320 ft. from W, Sec. 52, Blk. B-2, H.&G.N. Sur.
T.D. 3,004 ft.; building tanks; oil and gas at 2,999 ft.

Texas Co.'s No. 1 Taylor, 990 ft. S and W of Sec. 81, Blk. B-2, H.&G.N. Sur.
Location.

HUTCHINSON COUNTY

Huey et al's No. 1 Christian, 220 ft. from S and 330 ft. from W, Sec. 32, Blk. Y, A.&B. Sur.
S.D. 3,060 ft.

Stekoll's No. 2 G. W. Whittenburg, 330 ft. S and W of H. Prewitt Sur.
Drlg. 210 ft.

Stanolind O. & G. Co.'s No. 1 Kinzer, 330 ft. S and E, Sec. 148, Blk. 3, T.&N.O. Sur.
Material.

MOORE COUNTY

Alma Oil Co.'s No. 1 Jones, 330 ft. N and W. Sec. 171, Blk. 3-T, T.&N.O. Sur.
Fishing 3,342 ft.; 12,000,000 ft. of gas.

Phillips Pet. Co.'s No. 2 J. C. Wilson, Sec. 157, Blk. T-3, T.&N.O. Sur.
T.D. 3,912 ft.; P.B. to 3,191 ft. for gas well.

Texoma Nat. Gas Co.'s No. 1 Haas, 2,673 ft. N, 1,791 ft. E, Sec. 20, Blk. P.M.C., E.I.R.R. Sur.
Drlg. 1,133 ft

Texoma Nat. Gas Co.'s No. 3-P Sneed, 3,734 ft. N and E of M. George Sur.
S.D. 1,167 ft.

POTTER COUNTY

U. S. Bureau of Mines, No. 2-A Bivins, C NE Sec. 22, Blk. 6, B.S.&F.
Drlg. 2,200 ft.

RANDALL COUNTY

English et al's No. 1 Oxnard.
Swedging csg. 5,355 ft.; T.D. 5,375 ft.

WHEELER COUNTY

Bell O. & G. Co.'s No. 1-B Walker, 330 ft. S and 330 ft. W, Sec. 44, Blk. 24, H.&G.N. Sur.
Cellar.

Bowers & Carvers' No. 1 L. B. Simms, 330 ft. from N line, 330 ft. from E line of SW Sec. 60, Blk. 17, H.&G.N. Sur.
Drlg. 2,166 ft.

Carver Drilling Co.'s No. 1 Rock Island, 1,600 ft. from S line, 2,310 ft. from W line, Sec. 47, Blk. 13, H.&T.C. Sur.
T.D. 1,260 ft.; U.R. csg.

Christie-Hickman's No. 1 Walker, 330 ft. S and E of NE Sec. 49, Blk. 24, H.&G.N. Sur.
Drlg. 2,415 ft.

Cloud et al's No. 1 Farren, 330 ft. N and W, NE SE Sec. 34, Blk. 24, H.&G.N.
Drlg. 420 ft.

Dyke Oil Co.'s No. 1 G. W. Sitter, 330 ft. from N line, 330 ft. from E line, N½ NW Sec. 28, Blk. 24, H.&G.N. Sur.
Drlg. 2,175 ft.; 22,000,000 ft. of gas at 2,160 ft.

Ben G. Barnett's No. 1 Boren, NW cor. NE Sec. 24, Blk. 13, H.&G.N. Sur., 11 miles E and S of Shamrock.
S.D. 1,210 ft.

Johnson et al's No. 1 Grogan, 438 ft. N and 150 ft. W, Sec. 57, Blk. 23, H.&G.N. Sur.
Drlg. 700 ft.

LeFors Pet. Corp.'s No. 1 Perkins, 330 ft. from S line, 330 ft. from W line, Sec 54, Blk. 24, H.&G.N. Sur.
Rig.

Martin & Son's No. 1 Plummer, 330 ft. N and E NW SW Sec. 45, Blk. 45, H.&G.N.
Drlg. 200 ft.

Mudge Oil Co.'s No. 1 Dougherty, C SW Sec. 98, Blk. 23, H.&G.N. Sur.
Drlg. 810 ft.

Reno Oil Co.'s No. 1 Mankins, SW SE SE Sec. 54, Blk. 13, H.&G.N. Sur.
T.D. 2,216 ft.; no pipe line connection.

Rogers' No. 1 Timberlake, 330 ft. from N and W of NE NW Sec. 86, Blk. 13, H. &G.N. Sur.
Rig.

Smith Bros.' No. 1 Johnson, 330 ft. N and W, Sec. 34, Blk. 24, H.&G.N. Sur.
Cellar.

Smith Bros.' No. 1 Williams, 330 ft. N and E, W½ SE Sec. 49, Blk. 24, H.&G.N. Sur.
T.D. 2,551 ft.; 1,116 bbls. oil, 6% wtr., first day.

Underwood et al's No. 1 Roach, 330 ft. N and E. Sec. 27, Blk. 24, H.&G.N. Sur.
Drlg. 665 ft.

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AMERICAN ASKANIA CORPORATION

HOUSTON, TEXAS CHICAGO, ILLINOIS

$681,000,000

for Oil Equipment and Supplies, in 1935

Tulsa Should Be Largest Single Purchasing Point

A survey by the editors of The Oil and Gas Journal, recently completed, indicates that the oil equipment and supply business will enjoy a very substantial increase, in 1935—expenditures by oil producers, refiners and marketers approximating $681,000,000. The estimated expenditures for oil equipment and supplies in the four branches of the industry are as follows:

PRODUCTION	$253,000,000
PIPE LINE	99,000,000
REFINING	289,000,000
MARKETING	40,000,000
Total	$681,000,000

Such an expenditure would greatly exceed the figures for 1934, and would see the oil equipment and supply industries well on their way back towards normal.

Active Drilling Expected

The industry spent $137,826,700 more for drilling wells in 1934 than it did in 1933. With producing companies becoming more concerned about their future reserves of crude oil, the steady withdrawal of crude from storage, and the consumption of approximately 540,000,000 bbls. of crude oil each year more than is being discovered, drilling operations during 1935 are expected to show a further increase. Figures made available by a number of companies showing actual expenditures in recent years and amounts set up in budgets for expenditures in 1935 show that a substantial increase in expenditures in all branches of the industry is contemplated.

Pipe Line Expenditures

Expenditures by the pipe line branch of the industry during 1935 are expected to greatly exceed the amount paid out in 1934 and in each of the past three years. It is estimated that replacements of pipe and valves alone, on existing oil and gas lines will total $47,000,000, that maintenance of existing pipe line stations, purchases of trucks, ditchers, welding supplies and other incidentals will come to $22,000,000, and that approximately 1% of new pipe lines will be constructed at a cost for materials and supplies of $30,000,000. Many extensions are necessary to existing natural gas lines, and it is entirely probable that these will be constructed. With the increase in drilling operations in the oil industry, and promising developments in areas with very limited pipe line facilities, such as western Kansas, there is also every reason to believe there will be an increase in construction of oil pipe lines during the year.

Refining and Marketing

In the refining and natural gasoline industries it is estimated that approximately $185,000,000 will be spent for heavy equipment, and that chemical purchases will reach a new high of $104,000,000. An important factor in the purchase of new equipment will be the expansion of solvent refining. In the past year approximately $8,000,000 worth of special equipment was added, and from $10,000,000 to $20,000,000 could easily go into new selective solvent units in 1935.

The $40,000,000 which it is estimated the marketing branch will spend will go for tanks, pumps, other station equipment, construction, tank wagons, automobiles, etc.

Tulsa Will Be Hub of Purchasing Activity

The foregoing estimates, based on careful investigation by a group of experts, constitute good news for the manufacturer of oil equipment or supplies. These figures mean that his market is coming back. By all means, he should make careful preparations for obtaining his share of the anticipated business.

A sales office at the "Oil Capital" should go far towards assuring this. Tulsa, lying at the heart of the Mid-Continent which produces more than 60 per cent of the nation's oil, is without question the headquarters city for domestic oil production. The Tulsa area is headquarters for 44 oil companies which are ranked as major companies, and, altogether, has 658 oil companies and operators. These companies are among the major producers in every Mid-Continent, Gulf Coast and Rocky Mountain oil area. In addition, they control much of the pipe line and refining activity not only of the Mid-Continent but of the nation. A recent check also showed that two-thirds of the nation's natural gasoline production is controlled from Tulsa.

That oil equipment manufacturers are coming to recognize all of this, is indicated by the fact that no less than 46 of these manufacturers opened factories or warehouses in Tulsa, moved in stocks, established sales offices, or secured resident sales representation here, in the period between March 1st and October 1st of this year.

The Tulsa Chamber of Commerce will be glad to answer questions and to prepare detailed reports for firms considering Tulsa as a branch office, warehouse, or manufacturing point. Your inquiry is cordially invited.

TULSA

Oil Capital of the World

East Central Texas Wildcats

(Continued from Page 200)

3 miles NE of Longview.
Drlg. 2,700 ft.
Tuberville et al's No. 1 Ivy, 2,004 ft. S and 606 ft. E of F. B. Hardy Sur., 7 miles SE of Fairfield.
Material.

HARRISON COUNTY

W. G. Boyd et al's No. 1 W. L. Rudd, no check; in sec. of 360-ac. tract and sur., W. D. Perry Sur.
Elev. 316 ft.; S.D. 2,418 ft.

HENDERSON COUNTY

Campbell and Chamberlain's No. 1 R. Ansley, 1,724 ft. W and 300 ft. S of SE cor. of M. Matthews Sur., N. H. T. Thompson Sur.
Skidding derrick.
Crosby and Pulp's No. 1 M. T. Dobbs, NW cor. of east Dobbs 100-ac. tract, 4 miles E of Malahoff and S of Railroad, George Aldrick Sur.
S.D. 4,150 ft.

HOPKINS COUNTY

D. A. Hale et al's No. 1 L. M. Hall, 200 ft. from N and E lines of 70-ac. tract, 1 mile SE of Miller Gros. A. Caro Sur.
S.D. 1,485 ft.

HUNT COUNTY

Cauble & Thompson's No. 1 Reed, 330 ft. N of northerly NE cor. of C. B. Payne Sur., but in F. Thweatt Sur., 3 miles SE of Greenville.
Derrick.
G. S. & S. Co.'s No. 1 O. Popper.
Fishing 2,565 ft.
Hager et al's No. 1 Dallas Land Bank, 200 ft. from S and 100 ft. from N lines of L. Hart Sur., 7 miles SW of Greenville.
Drlg. 1,125 ft.
J. C. Hall's No. 1 Parrish, C of 100-ac. tract, N. Delaney Sur., 5 miles N of Lone Oak.
Derrick.
L. G. Priest's No. 1 Amelia Barnett, 1,075 ft. from W line, 320 ft. from S line of J. C. Hamer Sur.
Coring 3,535 ft.
Winan's No. 1 J. R. Phillips, 320 ft. from S line and 960 ft. from W line of tract and survey, W. J. James Sur.
S.D. 40 ft.

KAUFMAN COUNTY

W. J. Lewis et al's No. 1 D. Clark, 430 ft. from S line and 600 ft. from E line of Sur., 6½ miles NW of Elmo.
Drlg. 1,578 ft.
L. P. Kean's No. 1 J. B. Hunter, R. Sowell Sur., 300 ft. from SW and 150 ft. from SE of 50-ac. tract, 4 miles S of Terrell.
S.D. 2,010 ft.

LIMESTONE COUNTY

Chapman's No. 1 Hunt, 200 ft. from N and 350 ft. from W line 34.75-ac. tract, Israel Wood Sur., 3 miles NE of Kosse.
Rigged up.
Doughtry et al's No. 1 S. Welch, 150 ft. from NW and 900 ft. from NE of 77.64-acre tract in A. Varilia Sur., 4 miles W of Groesbeck.
T.D. 852 ft.; to set csg.
Pure Oil Co.'s No. 1 Rogers, 860 ft. S and 2,700 ft. W of 230-ac. tract, P. Villeria Sur.
Drlg. 250 ft.
Schultz' No. 1 Roy Ward, NE cor. of 73.3-ac. tract, 5 miles W of Mexia Field, Harrison York Sur.
Derrick.
Stewart Bros. and Watson's No. 1 T. N. Wilson, 1,400 ft. W and 330 ft. N of 236-.1-ac. tract in Alex W. Patton Sur., 1½ mi. SE of Prairie Hill.
Drlg. 1,895 ft.
V. V. Waite's No. 1 Barrow, 650 ft. from S and 950 ft. from E line of 320-ac. tract, W. G. McKenzie Sur., 3½ miles NW of Thornton.
Pits.

NACOGDOCHES COUNTY

Murray Oil Co.'s No. 1 C. B. Watkins, 150 ft. from N line and 330 ft. from NW lines of 160-ac. tract, 3 miles S of Caro, H. Y. Bailey Sur.
Fishing 3,925 ft.
Wells et al's No. 1 Z. Ramblin, 900 ft. N and 330 ft. W of SE cor. of tract and survey, J. Simpson Sur., 13 miles NE of Nacogdoches.
Rigged up.

NAVARRO COUNTY

Bennett Brothers' No. 1 T. E. Stewart, 150 ft. from NE line of lease, 10 miles SW of Corsicana, Wm. R. Bowen Sur.
S.D. 1,136 ft.
R. B. Codding et al's No. 1 Lela Kent, 450 ft. from S line and center of N and S lines of lease, 3 miles NE of Chatfield, C. B. Emmons Sur.
S.D. 1,550 ft.
W. J. Keeling et al's No. 1 J. F. Rushing 484 ft. from N line and 150 ft. from W line of 184-ac. tract, 6 miles SW of Richardson, Henry Ford Sur.
T.D. 2,580 ft.
McCullough et al's No. 1 C. Berry, 330 ft. from SE cor. of 35-acre tract, 1 mile W of Dawson, William Moss Sur.
S.D. 625 ft.

RAINS COUNTY

Wadley et al's No. 1 P. F. Jones, 400 ft. out of SW cor. of 22-ac. tract, 2½ miles S of Alba, B.B.B.&C. Sur.
S.D. 4,632 ft.

RED RIVER COUNTY

Dinger's No. 1 W. T. Norris, 1,000 ft. from S and 1,900 ft. from W of 400-ac. tract, Jos. Guest Sur., 1 mile S of Detroit.
Derrick.

RUSK COUNTY

George Hudson et al's No. 3 Jeff Phillips 150 ft. from N line of survey and 700 ft. from W line of 100-ac. tract, 4 miles SE of Minden, N. Villaria Sur.
S.D. 3,673 ft.
Ben Lamb's No. 1 H. Leath, 330 ft. out of NW cor. of 185-ac. tract in L. J. Dooley.
Drlg. 3,496 ft.

SMITH COUNTY

Deck et al's No. 1 Dendall, 330 ft. from S and W of 55-ac. tract, J. Williams Sur., 3 miles E of Van Field.
Spudded and S.D.
Fair et al's No. 1 Rushing, 1,000 ft. SE of old hole, 1½ miles SE of Whitehouse.
S.D. 4,673 ft.
Paul S. Williams et al's No. 1 Dean, 320 ft. E and 730 ft. N of 100-ac. tract in Denson Moore Sur., 1 mile NE of Bullard.
T.D. 2,450 ft.; recmtng. pipe.

VAN ZANDT COUNTY

Delcambre et al's No. 2 Crim, 400 ft. from S and 150 from E lines, Nacogdoches Co. School Lands.
Drlg. 660 ft.
Pet. P. L. & Storage Co.'s No. 4 Mrs. S. McGee, 450 ft. S of N line and 155 ft. E of W line of 53.4-ac. tract, Blk. 20.
S.D. 1,268 ft.
Pete Corley et al's No. 1 Slaton, 160 ft. from W and 660 ft. from N lines of William Carlton Sur., 3 miles SE of Ben Wheeler.
Drlg. 4,030 ft.
Florence Oil Co.'s No. 2 Sanger, 316 ft. W of SE cor. and 151 ft. S of S line of Pure-Blackstock lease, John Walling Sur.
Rig.
Gillum and Allen et al's No. 1 A. T. Bass, 150 ft. from W line and 150 ft. from N line of 10-ac. tract, William Hart Sur.
S.D. 1,700 ft.
Green and Winn's No. 1 Eaton, 330 ft. out of most westerly SW cor. of J. Wilson Sur., 2 miles SE of Martin.
Location.
American Oil Co.'s No. 1 Bryant, 483 ft. N of same operator's dry hole, Nacogdoches County School Land Sur.
T.D. 1,251 ft.; to deepen.
Lane-Tex Co.'s No. 1 Listenbee, 150 ft. N and E of tract, Wm. Daniel Sur.
Derrick.
Miller et al's No. 1 J. M. Palmer, 150 ft. from S and E lines of 69-ac. tract, Nacogdoches County School Land Sur.
S.D. 1,000 ft.
Peden and Olson's No. 1 J. M. Palmer, 200 S of No. 2 and 140 ft. from W line of tract, J. Goodman Sur.
S.D. 1,288 ft.
Pruitt & Graham's No. 3 Carter, 40 ft. E of W line and 160 ft. N of N line of Texas Co.'s Carter lease, Wm. Daniel Sur.
Drlg. 1,505 ft.
Peden & Olson's No. 4 Brannon, 150 ft. N and 600 ft. E of No. 1, J. Goodman Sur.
Coring 1,200 ft.
M. Rouch et al's No. 1 Bearden & Palmer 150 ft. out of SE cor. of 61-ac. tract, Nacogdoches C.S.L.
S.D. 1,237 ft.; to run tubing.
Wadley's No. 1 Carrus, 500 varas N and 1,000 varas E of most northerly SE cor. of 538-ac. tract, S.P. Sur.
Derrick.

Southwest Texas Wildcats

(Continued from Page 197)

from E line, 55 ft. from S line of Blk. 34, Por. 45.
T.D. 2,000 ft.; S.D. for new boilers.
Gato Oil Co.'s No. 1 Brocks & Showers, 500 ft. N line, 400 ft. W line of Tract 3, Blk. 26, Por. 79.
Drlg. 2,020 ft.
Jenkins & Secton's No. 1 John D. Puckett, 330 ft. N and W lines, Share 96, San Salvador del Tule grant.
Derrick.
Union Sulphur Co.'s No. 2 American Rio Grande L. & I. Co., 400 ft. from S and E lines of tract, Blk. 36, North Capisalle district.
Drlg. 3,020 ft.

JIM HOGG COUNTY

John D. Norwood's No. 1 C. W. Hellen, 330 ft. N and W lines, Sur. 48.
T.D. 1,370 ft.; S.D. for orders.
J. M. Shugart's No. 1 R. Holbien, 100 ft. from N line, 330 ft. from S line of Blk. 55, Sur. 17 of Holbien Subd., of Las Animas grant.
No report.
Sun Oil Co.'s No. 1 A. L. East, 660 ft. from N and E lines of Blk. 4, Sur. 33.
Showed S.W. and some gas 3,952-60 ft.
Texas Co.'s No. 1 Guiterrez, 2,310 ft S line, 330 ft. E line of Sur. 165.
Location.

JIM WELLS COUNTY

O. W. Killam's No. 3 Wade, ½ mile SW of Larcro's No. 2 Wade.
Set csg.; depth not reported.
Smith & Storey's No. 1 Martha E. Ellworth, 330 ft. N and W from SE cor. of W½ of W 426 acres of Stanley Welch Sur.
P.B. to 3,300 ft.; T.D. 6,115 ft.

KARNES COUNTY

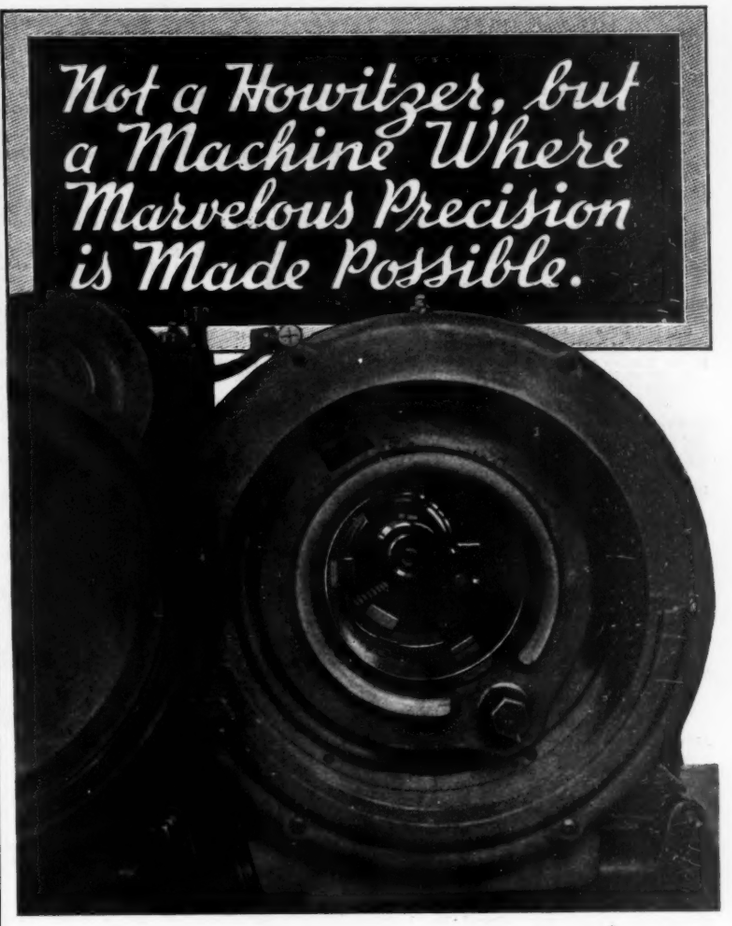
E. E. Green's No. 1 Miss Olive Henke, 2,640 ft. from SW cor. N along W line, thence at R/A 330 ft., Seguin grant.
Cmtd. surface csg.; prepare to drill ahead.
Pacific Gas & Fuel Co.'s No.2 Choate, near No. 1.
Moving in material.

KERR COUNTY

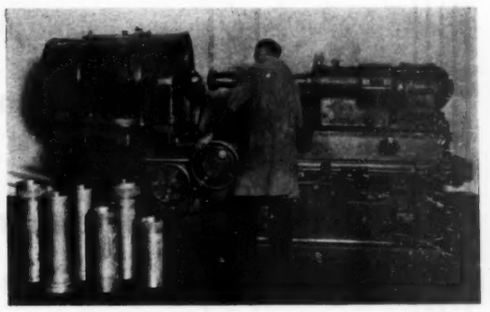
Emerald Oil Co.'s No. 1 Whitworth, 1,160 ft. from S line and 1,333 ft. from E line of Sec. 1,439, of the H.E.&W.T. Sur.
Prepare to deepen; T.D. 650 ft.
Jeff Love and Eastland Oil Co.'s No. 5-B Jeff Love, 1,500 ft. SE of No. 1 and 1,530 ft. from SE cor. and 300 ft. from N line of Sec. 1,591.
1,550 ft. of oil in hole; T.D. 3,530 ft.
J. F. Morrissey et al's No. 1 F. A. Karge, 1,400 ft. from S line and 600 ft. from E line of survey, Sec. 1, B.S.&F. Sur.
Drlg. lime 1,903 ft.

LEE COUNTY

Jas. E. Pederson's No. 1 Turner, 1,860 ft. from N line, 150 ft. from E line of tract, David Hudson Sur.
T.D. 6,330 ft.; W.O.C.



THE formidable contrivance above, resembling the breech of a howitzer, is the working end of one of Harrisburg's specially designed machines for grinding the interior of products requiring both high polish and utmost precision. The units shown in process at right are seamless steel pump liners. Incidentally, these products, now so indispensable in such industries as petroleum, were developed by us. Look to Harrisburg for leadership in engineering and workmanship in such seamless and forged steel products for the oil fields as these: Carbon and alloy steels, seamless steel pipe couplings, bull plugs, pump liners; forged steel pipe flanges; tool joint, casing, and drive shoe forgings.



One of Harrisburg's especially designed precision grinders

HARRISBURG PIPE & PIPE BENDING CO., Harrisburg, Pa.

Seamless & Forged Steel Oil-Field Products

LIVE OAK COUNTY

Baugh & McMillan's No. 1 Walton & Campbell, D. R. Fant Sur.
No report.

W. H. Helmerich's No. 1 Cartwright, 460 ft. from W line, 330 ft. from S line of Lot 16, Seale, Morris & Seale Sur.
Abd. 6,001 ft.

Henderson Coquat et al's No. 1 Little, 1,320 ft. NE of S cor. of M. M. Shipp Sur. and 330 ft. N of S line.
Testing 4,585 ft.

Loma Oil Co.'s No. 1 Cardwell, 330 ft. SE and SW lines of tract in Sparks Sur.
Abd. 970 ft.

Loma Oil Co.'s No. 1 Brewer, 330 ft. from SE and NE lines of 100-ac. tract in Sparks Sur.
Spudded.

MAVERICK COUNTY

Mike Chorgas et al's No. 1 Mathews, on edge of municipal airport at Eagle Pass. C.O.; T.D. 480 ft.

McMULLEN COUNTY

H. K. Boysen's No. 1 Hagist, 990 ft. S, 330 ft. W of NE cor. Sec. 10, H.&T.C.Ry. Sur. Coring 2,010 ft.

MEDINA COUNTY

Scoggins & Sanders' No. 1 L. W. Burrell, 150 ft. from E line, 1,750 ft. from N line of M. E. Gage Sur. 395.
S.D. 1,825 ft.

MILAM COUNTY

Barron & McGee's No. 1 R. Lundgren, 1,100 ft. NE line, 600 ft. NW line of 125-ac. tract in L. Kimbro Sur.
Location.

C. F. Drake et al's No. 1 Standard Coal Co., 970 ft. SW line, 1,700 ft. SE line of G. L. Johnson Sur.
S.D. 1,575 ft.; (corrected).

Second Natl. Bank's No. 1 B. P. Ward, 150 ft. SW line, 950 ft. SE line of 100-ac. tract, L. Taylor Sur.
Standing 2,439 ft.

REAL COUNTY

M. J. Heartwell et al's No. 2 L. J. Haby, 694 ft. from W line and 2,153 ft. from S line of A.B.&M. Sur. No. 175.
T.D. 2,837 ft.; moving in new engine.

SAN PATRICIO COUNTY

Allied Minerals' No. 1-A Ramsey, 466 ft. E, 220 ft. N of SW cor. of the North B. Giddings Sur. on a 1,000-ac. tract.
Sandy shale 2,642 ft.; moving in heavier rig; S.D.

Carpenter et al's No. 1 Sadler, Mud Flats area.
Standing 6,009 ft.

Lonnie Glasscock's No. 1 M. F. Timmons, 330 ft. out of SE cor. of Blk. 37, San Patrico townsite.
Drlg. 6,100 ft.

STARR COUNTY

Armstrong, Emanuel & Adams' No. 1 S.C. C.C., 330 ft. from S and E lines of Blk. 57, Porcion 38-89.
Cmtd. surface csg.

Jules Alford's No. 1 A. Flores, 330 ft. from N and W lines of 10-ac. of E 20-ac. of NW 80-ac. of Tract 250, Por. 38, 8,500 ft. NW discovery well in Hidalgo County.
T.A. 3,502 ft.

Conway & Emanuels' No. 1 S.C.C.C., 360 ft. W line, 330 ft. S line, Blk. 62, Jeffries Lambeth Div., Porcion 38-89.
Moving in material.

C. R. Borah's No. 1 A. Guerra, San Jose grant, 330 ft. from N and 150 ft. from E lines of Sec. 6 (NE part of county).
Standing 2,687 ft.

Crawford et al's No. 1 Hicks et al, 150 ft. SE and NE line of NW, Perdernal grant.
Drlg. 801 ft.

Dainwood Oil Co.'s No. 1 Guerra, 5,280 ft. W line and N line of Share 26, Porcion 70-71-72.
Location.

R. H. Vise's No. 1 Carruth, 3,690 ft. S line, 3,300 ft. W line, Share B-1, Porcion 91-92.
Fishing 2,420 ft.

J. T. Kyle et al's No. 1 G.L.&C.C., 330 ft. midway between N and S lines of Lot 4, Porcion 100.
Location.

Merren, Johnson & Jeffries' No. 2 S.C.C.C., 660 ft. N line, 330 ft. W line of Blk. 27, Porcion 38-89.
Coring 2,710 ft.; showing gas.

C. L. Smith et al's No. 1 J. M. Longfellow, 330 ft. out of NW cor. of Sur. No. 281.
S.D. 3,330 ft.

Heep Oil Co.'s No. 1 Guerra, 330 ft. from NE and SE lines of Blk. 35, J. N. Crawford Subd., Por. 56, Jurisdiction of Mier.
Drlg. 460 ft.; (corrected).

Smith & Weston's No. 1 M. M. Garcia, Blk. 9, Sur. 908.
Smt. surface csg. 100 ft.

Sun Oil Co.'s No. 1 Gonzales & Clark, 600 ft. out of NW cor. of NE Sec. 372, T.T. Ry. Sur. No. A-773.
Abd. 5,247 ft.

United Prod. Co.'s No. 1 Guerra, 36, 170 ft. from NE line, 1,521 ft. from NW line of Porcion 66.
Abd. 3,563 ft.

E. L. Younkin's No. 1 Kelsey Bass, 330 ft. from S line, 7 ft. from W line of Blk. 19, in Porcion 87.
Standing 2,572 ft.

TRAVIS COUNTY

Barron & McGee's No. 1 R. Lundgren, 1,100 ft. NE line, 600 ft. NW line of 125-ac. tract in L. Kimbro Sur.
Drlg. 764 ft.

Humble O. & R. Co.'s No. 3 Buck Christian, 2,150 ft. SW line, 2,300 ft. NW line of J. P. Kemp Sur.
Location.

Mimms, New & Anderson's No. 1 Bohm, 1,250 ft. SW along NW line of Bohm tract from N cor. and 150 ft. NW in S. Del Valle Sur.
Standing 515 ft.

C. A. Stubbs' No. 1 Julius Kerlin, 530 ft. SW line, 450 ft. NW line of 122-ac. tract in I. Lindsay Sur. No. 61.
Standing 709 ft.

Title et al's No. 1 Johnson, 330 ft. each way from cor. of 50-ac. tract in Kimbro area.
Drlg. 687 ft.

WEBB COUNTY

Detterhaim & Jones' No. 1 M. Jones, 600 ft. E line, 1,620 ft. S line of Sur. 1,640.
Standing 455 ft.

Payne et al's No. 1 Hoggterp, Blk. 6, Sur. 1,110, W of Oilton.
Moving in rig.

WILLACY COUNTY

W. W. Silk's No. 1 Stillman, Lot 16, Blk. 30, Santa Rosa Subd., Share 44.
Abd. 2,000 ft.

South Texas Dev. Co.'s No. 1 Armendais, 1,500 ft. W of Arroya Colorado River, 1,200 ft. N of S line of Tract 4.
Derrick.

WILLIAMSON COUNTY

Johnson & Ray's No. 1-A Mary Smith Oxford, 350 ft. S, 40 deg. E of No. 1 Williams Sur.
S.D. 1,149 ft.

Mann & Roez et al's No. 1 F. Roed, John Bevil Sur. 56.
Abd. 1,030 ft.

T. J. McConnell's No. 1 J. R. Nazier, 150 ft. from S line and San Gabriel River and 150 ft. from E line of 124-ac. tract in Zarzo Sur.
S.D. 960 ft.

J. Morgan Russell's No. 1 Nelson ,150 ft. S line, 1,115 ft. E line of John L. Justice Sur. No. 2.
S.D. 894 ft.

J. Morgan Russell's No. 2 Nelson, 3,200 ft. from CEL of W. Donaho Sur. No. 117, 1,600 ft. from CSL.
S.D. 375 ft.

Stailey & Caffey's No. 1 A. J. Nelson, 350 ft. from SE line and 150 ft. from NE line of Barney C. Love Sur.
T.D. 355 ft.; H.F.W.; standing.

WILSON COUNTY

Ray Oil Co.'s No. 1 J. M. McDaniel, 1,700 ft. from SW line, 350 ft. from NW line of 193.5-ac. tract in Concepcion Bostello Sur. No. 9.
Rigged up and S.D.

J. C. Yancey's No. 1 Lyssy, 300 ft. from SE and SW lines of lease in D. J. Holt Sur.
T.D. 1,600 ft.; S.D. in shale.

ZAPATA COUNTY

Danvers & Harrison's No. 1 M. J. Vela, 680 ft. NE line and 300 ft. NW line, or 3,140 ft. E line and 330 ft. N line of Por. 39, Blk. 7, Bela Subd.
T.D. 1,603 ft.; reaming at 1,400 ft.

Merle Gunby's No. 4 Alice D. Haynes, 760 ft. from SE line, 200 ft. from SW line of Blk. 4, Haynes Subd. of Comitas & Villa grant.
Drlg. 602 ft.

R. B. Morrison's No. 1 Vela, 1,320 ft. SW line, 660 ft. SE line of Blk. 5, Re-Plat of Jamison Subd., Por. 20.
Rigging up.

Joe Palmer's No. 1 J. M. G. Martinez, 150 ft. SE and SW line, Blk. 27, Sur. 434.
Standing.

A. H. Wray's No. 5 Gopher Trust, 330 ft. NE and NW lines of Blk. 12, Sur. 1, San Ignacia Subd., Borrego grant.
Drlg. 1,687 ft.

ZAVLA COUNTY

Humble Oil & Ref. Co.'s No. 1 R. L. Ball 330 ft. E of W line of Luciana De la Garza Sur. and 50,190 ft. S of Frio.

Southwest Texas Proven

Week Ending December 22

NORTH DALE POOL—BASTROP COUNTY

Cole Pet. Co.'s No. 1 Rubin Gage, NE cor. of tract, 150 ft. each way from corner.
Location.

Marts & Beaver's No. 1 Voss, 875 ft. from SW line, 155 ft. from NW line of 100-ac. tract, in Litton Sur. No. 1.
Drlg. 1,049 ft.

Joe E. Mills' No. 1 Mrs. W. J. Cardwell, 900 ft. from SE line, 1,200 ft. from SW line of tract, J. A. Navarro Sur.
S.D. 1,324 ft.

Ogden & Reed's No. 3 M. F. Tally, 300 ft. NE line, 200 feet SE line of 70-ac. tract in Joshua Gray Sur.
S.D. 2,293 ft.

Porter and Neal's No. 1 J. F. Wolff, 150 ft. from NE line, 2,800 ft. from SE line of F. Edmundston Sur.
Spudded and S.D.

CAESER—BEE COUNTY

Falvey et al's No. 1 J. J. Grissom, 150 ft. N and W lines of 771.9-ac. of McEarly Sur.
Spudded.

Luling O. & G. Co.'s No. 6 (B-4) Ruhmann, 150 ft. N line, 300 ft. W line of Blk. 29.
Cemented csg. in oil sand, T.D. 3,087 ft.

TULETA—BEE COUNTY

Blanco Oil and Buchanan's No. 2 Peves, 300 ft. from S and E lines of their 100-ac. "A" lease.
S.D. 3,540 ft.

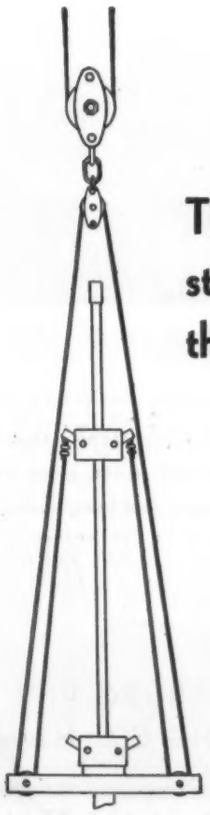
Heyser, Heard & Jones' No. 3 (B-2) Rapp. T.D. 3,906 ft.; flowing 50 bbls. on 3/16-in. choke.

Heyser, Heard & Walton's No. 1 Peres, C. of Blk. 9, of SE Sec. 8.
Showed S.W.; T.D. 3,975 ft.; P.B.

Edwin M. Jones' No. 2 Robinson, 330 ft. from S line, 990 ft. from E line of SW of Sec. 5.
Location.

Edwin M. Jones No. 1 Silcock.
Set surface csg.

Houston Oil Co.'s No. 1 Ed Strauss, C of Blk. 2, SW Sec. 9, Uranga grant.
Set surface csg. 373 ft.; W.O.C.



A service organization that specializes in the safe handling of high pressures.

★ ★ ★

The running and/or pulling of tubing or drill stem under pressure, including in particular the running of packers under pressure

and

Otis Removable Bottom Hole Chokes and plugs for any size tubing or casing larger than 1".

The SOUTHERN STATES COMPANY, Inc.

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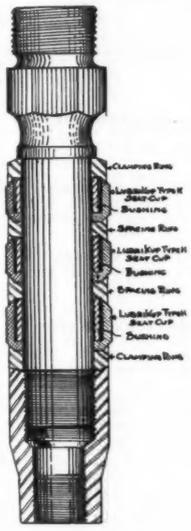
LUBRIKUP QUALITY PRODUCTS

LubriKup Valve Cups are made of highest quality materials under fully standardized conditions, thoroly inspected for accuracy in size and form. Available in 3 standard grades—hard, medium and soft. Special hard and special soft supplied upon order.

"A LubriKup for Every Service and Service With Every LubriKup"



LubriKup Seating Assembly licensed under U. S. Pat. No. 1,934,781 has been adopted as standard equipment by a large number of Producing Companies after thoro and searching field tests.

This Assembly offers the following exclusive features:

1. Secure seating of pump.
2. Long service life—Well may be pulled repeatedly without replacing our Type H Seating Cup.
3. No turn-over of cups in pulling.
4. Reduced pulling costs.

Sta-Pakt Repack, embodying the following advanced design features:

1. *Fibre Tube Mounting* holding the repack true to dimensions and form.
2. *Formed Ends* fitting ring seats, saves time and trouble tucking loose ends in ring seat.
3. *Mounting:* Fibre tube is pushed out sufficient to allow valve body to enter repack. As repack is advanced, fibre tube is pushed out assuring accurate mounting of repack.
4. *Manufacture:* Highest quality long fibre flax packing, skilled workmanship and rigid inspection.

THESE PRODUCTS EXCLUSIVELY BY

LubriKup Company, Inc.

WILLIAMSPORT, PA., U.S.A.

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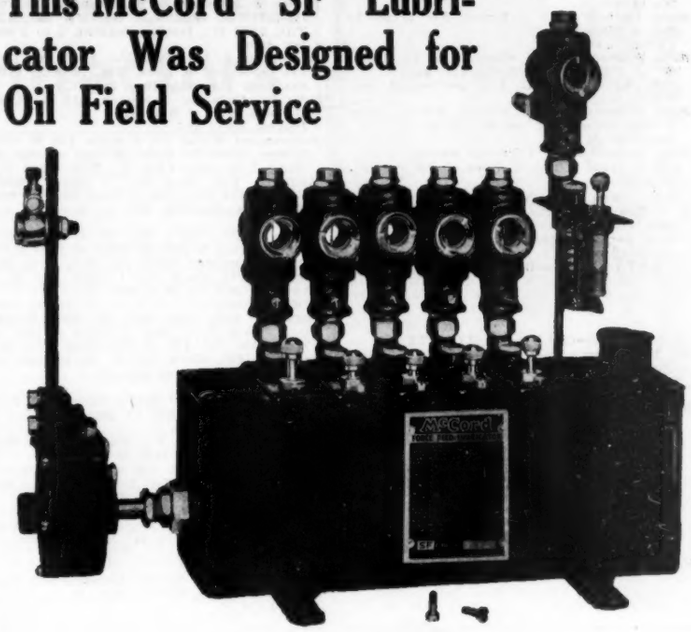
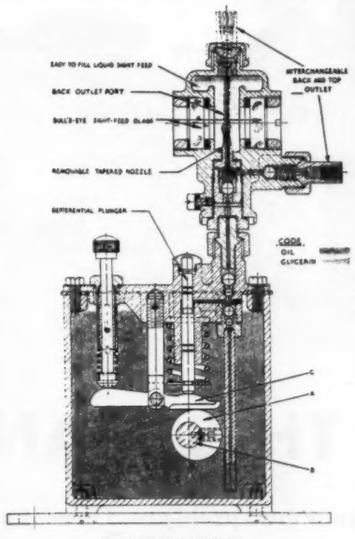
This McCord "SF" Lubricator Was Designed for Oil Field Service



The McCord "SF" Lubricator Backed by McCord's 38 Years Lubricator Building Experience



CROSS SECTIONAL VIEW OF McCORD CLASS "SF" LUBRICATOR

McCord's years of experience in supplying most of the lubricators used in the oil fields made possible this advanced "SF" lubricator design incorporating many exclusive features invaluable to users of lubricators in this field. The time tried McCord features and the ruggedness of its construction result in new standards of dependability and accuracy of operation. You can depend on a McCord Lubricator for years of service delivering oil with the same measured regularity winter and summer.

Positive lubrication is more than a statement with McCord, it is a fact. Changes of speed, load, or temperature do not affect the oil delivery from a McCord "SF" lubricator.

Flexibility of oil delivery with a McCord means accurate measured delivery ranging from a fraction of a drop to several drops each pump impulse. McCord sight feeds are on the discharge side of the pump. Therefore, all oil passing through the sight feed is delivered to the point of lubrication. McCord lubricators have the most flexible and accurate oil delivery of any lubricator on the market. Adjustments are easily and quickly made and once made maintain that oil delivery.

Any McCord pump unit may be removed without disturbing or in any way interfering with the operation of the lubricator. Remove two slotted hexagon nuts and the entire pump unit may be lifted out. This feature saves valuable time and eliminates the necessity of shutting down the pump compressor or engine.

A new catalog giving more detailed information on these features as well as other McCord points of superiority will be sent on request.

Specify a McCord lubricator on your next installation.

McCORD RADIATOR & MFG. CO.
Lubricator Division
Detroit, Mich.

THERE ARE MORE

McCord Lubricators

IN THE OIL FIELDS THAN ALL OTHER MAKES COMBINED

Mills Bennett's No. 2 Harris, 990 ft. from E line, 330 ft. from S line of tract.
No report.
Mills Bennett's No. 1 Roper, SW offset to No. 1 Silcock.
Coring 3,930 ft.
Mills Bennett's No. 1 Silcock, 330 ft. S and W of NE cor. Sec. 9, Uranga grant.
T.D. 4,326 ft.; P.B. and perforated csg. 3,898-3,901 ft.
Mills Bennett's No. 2 Silcock, 330 ft. from S and E lines of 160-ac. tract.
Location.
Mills Bennett's No. 1 Tuleta Mercantile Co., 330 ft. from N and W lines of SW Sec. 10. Derrick.

HOCH—BEXAR COUNTY

H. J. Trawalter's No. 7 fee, 150 ft. from N line, 450 ft. from E line of 202-ac. tract in S. Jett Sur. No. 53.
Standing 450 ft.

ALTA MESA—BROOKS COUNTY

Mrs. Florence East's No. 1 G. Madrigal, 800 ft. S line, 300 ft. E line of Share "B," R. G. Salinas grant.
No report.

DALE—CALDWELL COUNTY

W. B. Hinton's No. 1 Osteen, 150 ft. SW line, 450 ft. NE line of 70-ac. tract in Swearingen Sur.
T.D. 2,043 ft.; R.U. to pump.
McNeil Pet. Co.'s No. 1 J. M. Micars, 660 ft. NW line, 700 ft. SW line of 327-ac. tract in W. C. Swearingen Sur.
S.D. 1,800 ft.

DUNLAP—CALDWELL COUNTY

Moseley's No. 1 J. M. Pierce, 150 ft. E. line, 400 ft. S line of G. C. and W. P. Walker tract, Seale Sur. No. 3.
Csg. 2,195 ft.

GOVERNMENT WELLS POOL—DUVAL COUNTY

Brown & Nessly's No. 1 Curry, 330 ft. N line, 900 ft. W line of SW. Sur. 62.
T.D. 2,365 ft.; I.P. 350 bbls. daily; comp.
Brown & Nessly's No. 2 Curry, 430 ft. W line, 330 ft. N line of NW SW of Sur 62.
Sand 2,356-61 ft.; W.O.C. 2,361 ft.
Brown & Nessly's No. 3 Runnels, 330 ft. S line, 990 ft. W line of NE NW Sur. 62.
T.D. 2,366 ft.; testing, making 2 to 3 bbls. per hour.
Edgington & Murray's No. 1 C. W. Hahl, 330 ft. N and E lines, Blk. 16, Sur. 250.
Skidding rig; standing 250 ft.
Feliz Oil Co.'s No. 3 Norton, 330 ft. N and E lines, SW of Sur. 62.
Testing 2,373 ft.
Government Wells' No. 9 State, 330 ft. from N line, 2,310 ft. from W line of Sur. 60.
Cmtd 7-in. csg. 2,224 ft.; T.D. 2,258 ft.
Magnolia Pet. Co.'s No. 2 Duval County Ranch, 330 ft. from S line, 990 ft. from E line of Sur. No. 57.
Derrick.
Magnolia Pet. Co.'s No. 11 J. O. Wilson, 330 ft. from S and E lines of Sur. 136.
Cmtd. 7-in. csg. 2,309 ft.; T.D. 2,315 ft.
Magnolia Pet. Co.'s No. 1 Ruiz, 330 ft. N and E lines of W½ Sec 68.
Drlg. 2,309 ft.
Magnolia Pet. Co.'s No. 10 Hahl-Sutherland, 1,650 ft. N and W lines of Sur. 61.
T.D. 2,311 ft.; I.P. 8 bbls. hour; comp.
Magnolia Pet. Co.'s No. 1 A. Herbst, 330 ft S and E lines of Sur. 70.
Drlg. 2523 ft.
Newton & Andrews' No. 1 Bowe, 330 ft. S and W lines of Blk. 21, Sur. 250.
Testing 2,308 ft.
Russ Pet. Co.'s No. 2-C Hahl, 330 ft. from N and E lines of NW of Sur. 62.
T.D. 2,349 ft.; I.P. 150 bbls.; comp.
Russ Pet. Co.'s No. 5-C Hahl, 330 ft. S and E lines of SW NW of Sur 62.
T.D. 2,349 ft.; I.P. 100 bbls.; comp.
Salt Dome Oil Co.'s No. 1 Moody, 330 ft. from N line, 1,870 ft. from W line of Sur. No. 60.
Drlg. 1,903 ft.
Smith & Story's No. 12 Lundell, 330 ft. S line, 990 ft. W line of Sur. 48.
S.D. 1,810 ft.

Sun Oil Co.'s No. 4 Winch & Henne, 330 ft. S and E lines of lease, Blk. 15, Sur. 250.
T.D. 2,366 ft.; I.P. 40 bbls.; comp.
Texas Co.'s No. 12 D.C.R.C., 1,500 ft. S line, 480 ft. W line of SE of Sur. 362.
Rig up.
Texas Co.'s No. 7 R.D.L.C., 330 ft. S and W lines of Sur. 135.
T.D. 2,360 ft; I.P. 100 bbls.
E. R. Thoas' No. 1 Bishop Cattle Co., 2,325 ft. E line, 330 ft. N line of S½ of Sur. 135.
Location.
J. H. Winch's No. 1 Smith Corkill, 1,667 ft. NW line, 980 ft. SW line of Sur. 491.
Drlg. 2,748 ft.

HOFFMAN—DUVAL COUNTY

Southwest Drlg. Co.'s No. 1 Cuellar, 330 ft. SW and NW line of NE of Sur. 114.
T.D. 43 ft. (corrected).

DARST CREEK—GUADALUPE COUNTY

Grayburg Oil Co.'s No. 1 Appling, 150 ft. W of E cor. of 15-ac. tract in J. Hodges Sur.
Waiting on cmt to set; T.D. 2,574 ft.

LUCAS—LIVE OAK COUNTY

Lion Oil & Ref. Co.'s No. 2 McNeil, J. Curry Sur., 660 ft. N of No. 1.
T.D. 6,035 ft.; C.O.
Houston Oil Co.'s No. 29 Cartwright.
Prep. to drill plug 5,260 ft.

SAM FORDYCE—HIDALGO COUNTY

W. E. Butler's No. 1 F. B. Guerra, 93 ft. N line, 294 ft. S and W lines of 3.5-ac. tract in Tract 254, Por. 39-40.
Location.
Jack Clements' No. 1 Felipe Farias, 150 ft. from N and E lines of Share 273, Por 39, Reynosa.
T.D. 2,804 ft.; tested 300 lbs. on tubing, 200 lbs. on csg.
Cosmo Pet. Co.'s No. 1 F. B. Guerra, 330 ft. W line, 130 ft. N and S lines of N 25-ac. of S 100-ac. of E 290-ac. of Tract 254, Por. 39-40.
Drlg. 2,250 ft.
Danvers-Harrison & Davis' No. 1 Dr. Austin, center of E 7.2-ac. of S 14.4-ac. in Share 282, Por. 39.
Location.
Davis & Harrison's No. 1 Smith, S offset to No. 1 Guerra, of D. & H.
Cmtd. surface csg.; T.D. 210 ft.
Porter Evans' No. 1 David Flores, Tract 262, Por. 38.
S.D. 2,230 ft.
Henshaw Oil Corp.'s No. 1 Seabury et al. C of SW 11.5 acres of NE 45.25 acres. Tract 256, Por. 38.
Location.
R. C. Horne's No. 1 F. B. Guerra, 93 ft. S line, 294 ft. E and W lines of NW 2.5-ac. tract in S 125 acres of E 290 acres of Tract 254, Por. 39-40.
Abnd. location.
T. I. Larson's No. 1 G. G. Salinas, 330 ft. S and W lines of Share 10, Por. 41.
Drlg. 2,830 ft.
Moncrief & Showers No. 1 Edinburg State Bank, 303 ft. N line, 165 ft. E line of Tract 276, Por. 40.
Moving on.
Moncrief & Showers' No. 2 John Lawrence, 305 ft. N line, 241 ft. E line of 13.5-ac., Tract 274, Por. 39.
Moving in derrick.
Moncrief & Showers' No. 2-B John Lawrence, 305.5 ft. N of S line, 580.6 ft. S of No. 1-B, 240.6 ft., or midway between E and W lines of Tract 274, Por. 39.
Cmtd. csg.; T.D. 2,740 ft.
Moncrief & Showers' No. 1 C. E. Smith, Tract 3-B, Por. 41.
Moving in machinery.
Moss & Bass et al's No. 1 F. B. Guerra, 245 ft. N line, 300 ft. W line of 25 acres of S 50 acres of E 290 acres, Tract 254, Por. 40.
Location.
Navarro Oil Co.'s No. 2 Seabury, 330 ft. S and W lines of N 25-ac. of SE 51-ac., Tract 256, Por. 38.
Prep. test sand 2,756-64 ft.
Phillips Pet. Co.'s No. 1 Seabury et al, Tract 278, Por. 40.
Spudded and S.D.
Hiram Reed's No. 1 Farias, Tract 268, Por. 39.
Drlg. 1,600 ft.
Rogers O. & G. Co.'s No. 1 Guerra.
S.D. 1,400 ft.
Ed Sullivan's No. 1 E. B. Guerra, center of NE 10.77 acres of SW 40.7 acres of Tract 254, Por. 39.
Location.
Van Dresar et al's No. 1 W. R. Jackson, 330 ft. from N and W lines of 92-ac. tract, Por. 38-39-40, Blk. 273.
Location.
Weekly Oil Co.'s No. 1 Smith, Tract 278, Por. 40.
Making 20 bbls. fluid per hour; T.D. 2,750 ft.
Weekly Oil Co.'s No. 2 Smith, 630 ft. N line, 164 ft. E line of NE 34.43-ac. in Tract 278, Por. 40.
Location.
Otto Woods' (Kingwood) No. 4 F. B. Guerra, 330 ft. S and E lines of NW 30 acres of S 150 acres. Tract 254, Por. 39.
Moving in derrick.
Otto Woods' No. 4 John Lawrence, 330 ft. from E line, 250 ft. from S line of W 40 acres. Tract 274, Por. 39.
Rigging up.
Otto Woods' (Kingwood) No. 5 John Lawrence, 165 ft. W line, 235 ft. N line of Tract 274, Por. 39.
Moving on.

SANDIA—JIM WELLS COUNTY

Walsh & Long's No. 1 Allen.
Cmtd. surface csg. 350 ft.

SEELIGSON—JIM WELLS COUNTY

Magnolia Pet. Co.'s No. 5 Seeligson ,1,330 ft. N, 660 ft. E of No. 2 well on Farm 1, Blk. 4 of Canalas Sur.
Drlg. 1,990 ft.

JACOB POOL—McMULLEN COUNTY

American Gas Co.'s No. 1 L. Jacobs Corp., 350 ft. W of SE cor., 160 ft. SE line of tract in Fadden Sur.
Spudded and S.D.
Jane Oil Co.'s No. 3 H. L. Lark, 500 ft. N of No. 2.
T.D. 225 ft.
Loma Oil Co.'s No. 32-A Jacob, 660 ft. S of No. 31-A.
Rig up.
Motes & Bettingfield's No. 2 Lark, 660 ft. S of No. 1 and 330 ft. W line of lease.
Moving in rig from No. 2.
Newton et al's No. 1 Murphy, SW cor. of Sur. 480.
Drlg. 1,610 ft.
Stewart & Holding Co.'s No. 3 Jacob, 660 ft. S and 660 ft. E of No. 2, John Faddes Sur.
T.D. 895 ft.; S.D.

SINTON—SAN PATRICIO COUNTY

Heep Oil Corp.'s No. 2 R. Welder, 466 ft. from S line, 2,000 ft. from Eline of Adeline Welder tract in Victor Loupsey Sur. Derrick.
Heep Oil Corp.'s No. 4 R. Welder, 466 ft. from S and W lines 300-ac. tract, Victor Loupsey Sur.
Making 50 bbls. oil daily, 50 per cent S.W.; C.P. 1,925 lbs.; T.P. 1,700 lbs.; T.D. 5,886 ft.
Plymouth Oil Co.'s No. 2-B Welder, start at SW cor. of "B" lease, thence NW along the W line 2,100 ft., thence 350 ft. NE at R/A.
Cutting out stuck drill pipe.

LOS OLMOS—STARR COUNTY

J. P. Kennedy's No. 3 Kelsey-Bass, 200 ft. SE of No. 7 Kelsey-Bass in Blk. 7 of Porciones 75, 76 and 77.
Drlg. 710 ft.

CUEVITAS POOL—STARR COUNTY

Sur. Oil Co.'s No. 5-C M. Guerra & Son, 1,320 ft. NE of 4-C La Sacatosa grant.
Location.

RIO GRANDE CITY—STARR COUNTY

Goodwin & Zimmerman's No. 1 Ida Davis, 33 ft. SW line, 576 ft. NW line of Blk. 16, Tract 4, Share 73, Por. 81.
Coring 1,460 ft.

AGUA DULCE—NUECES COUNTY

Clymore Prod. Co.'s No. 1-C Ollie Purl, 660 ft. N and E lines of Lot No. 2, Sec 7, Peters Subd. No. 2.
Moving in rig.
United Prod. Co.'s No. 1 M. F. Rivers, 330 ft. at R/A N line, 330 ft. R/A E line of Rivers 168.82 acres, Palo Alto Matias Garcia Grant.
Drlg. shale 650 ft.

SAXET—NUECES COUNTY

Southern Mineral Corp.'s No. 4 Ocher, 1290 ft. S line and 417 ft. E line of Ocher 202.52-ac. tract in Sec. 8.
Derrick.

WEST COLE POOL—WEBB COUNTY

American Liberty Oil Co.'s No. 10-A Bruni, 330 ft. from SW line, 360 ft. from SE line of Sur. No. 6, Arispe Grant Sur.
Location.
American Liberty Oil Co.'s No. 11-A Bruni, 508 ft. from NE line, 260 ft. from NW line of Sur. No. 8, Arispe Grant Sur.
Cmtd. surface csg. 295 ft.
American Liberty Oil Co.'s No. 12-A Bruni, 777 ft. from SW line, 330 ft. from SE line of Sur. No. 6.
Cmtd. surface csg.
American Liberty Oil Co.'s No. 8-A Bruni, 883 ft. NW line, 777 ft. SW line of Sur. 6, M. Arispe grant.
Location.
Herman Brown's No. 4 Bruni Est., 418 ft. NE line, 260 ft. SE line, Blk. 7, Sur. 5, Arispe Grant.
T.D. 3,400 ft.; prep. to test.
Cole Pet. Co.'s No. 88 R. Benavides, 990 ft. SW line, 330 ft. SE line, of Sur. 1
7-in. csg. 3,337 ft.; T.D. 3,413 ft.
Highland Oil Co.'s No. 1 Bruni, 152 ft. SW line, 330 ft. NW line, Sur. 7.
Cmtd. short string csg. to shut off gas; T.D. 2,417 ft.
O. W. Killam's No. 30 Bruni Est., 330 ft. SE line, 1,437 ft. SW line of Sur. 6, M. Arispe grant.
Drlg. plug.
O. W. Killam's No. 31 Bruni, 2,187 ft. SW line, 150 ft. SE line of Sur. 6.
Location.
Magnolia Pet. Co.'s No. 5 Brennan-Benavides, 284 ft. NW cor. of Blk. 456-467, on lines of Blk. 466-467, M. E. Hale Subd., Arispe grant.
Bailing; T.D. 2,774 ft.
Starr State Oil Co.'s No. 11 Yeager, 200 ft. S line, 450 ft. E line of 632-ac. tract in Share 5 of Los Animas grant.
Abnd. 3,496 ft.
Sun Oil Co.'s No. 3 Bruni, 260 ft. SE line, 418 ft. NE line of Sur. 5.
Drlg. 2,105 ft.

BYERSVILLE—WILLIAMSON COUNTY

Ogden & Reed's No. 1 (2) C. G. Zieschang, 3,500 ft. SE line, 150 ft. SE line of 206-ac. tract in H. White Sur.
Rigging up.
G. L. Rowsey's No. 5-A Heep.
Fshg. 899 ft.
G. L. Rowsey's No. 5-A Sladek, 450 ft. NE line, 325 ft. SE line of 195-ac. tract in B-2 H. White Sur.
Derrick.

BLAS URIBE—ZAPATA COUNTY

O. W. Killam's No. 9 Bruni, 180 ft. SE line, 400 ft. NE line of Blk. 9, Blas Uribe tract, Borrego grant.
Drlg. 902 ft.

JENNINGS—ZAPATA COUNTY

Texas Co.'s No. 61 Whitehead, 16,489 ft. SW line, 1,007 ft. SE line of Cerrito Blanco grant.
Rigging up.
Norden & Morris' No. 1 Ramirez, 570 ft. SW line and NW line of Blk. 7, Share 20, Por. 91.
Spudded.
S.R.C. Oil Co.'s No. 5-F Cuellar, 200 ft. E line, 1,534 ft. N line of Blk. 21, Sur. 411.
Location.

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Among Gulf Coast Drilling Contractors

Gulf Coast drilling contractors, most of whom were shanghaighed by their better halves last Friday and Saturday and compelled to do a bit of collaborating with Santa Claus, can look back on 1934 as a very busy year. Moreover, they can confidently look forward to 1935 as a year in which they will be even busier—since reports are out that many major and many independents will undertake increased drilling campaigns during the year. A number of interesting land deals are being brought to final terms, almost all of which call for immediate drilling. It is anticipated that the race for "another Conroe" will be on in full tilt very shortly after the holidays are concluded. Late in the year, three or four deep wells were successfully completed for high gravity or distillate producers, and all of these will doubtless come in for additional wells. Harrison & Abercrombie's Old Ocean well, Bunte's Eureka Heights well, and Steen Drilling Co.'s Port Lavaca well are cases in point. The Oil & Gas Journal's reports on Gulf Coast drilling contractors' activities will, in 1935, be supplemented by information on interesting rig practices initiated by various contractors in this area.

George Echols announces the addition to his staff of tool pushers of Hugh Thomas Echols, 6½ pounds ringside weight, who, George stated, arrived in the world the other evening hollering lustily for sauerkraut—proving the authenticity of his Dutch ancestry. It was stated at the hospital that the father is expected to recover. In order to keep his new helper busy, Echols has accepted contracts to drill two wells for the Texas Co. near Hebbronville, in Jim Hogg County; another well for the Humble Oil & Refining Co. at Greta; is rigging up to drill a well for Walter Goldston near Cypress in Harris County; and will have a new location to announce in the next several days.

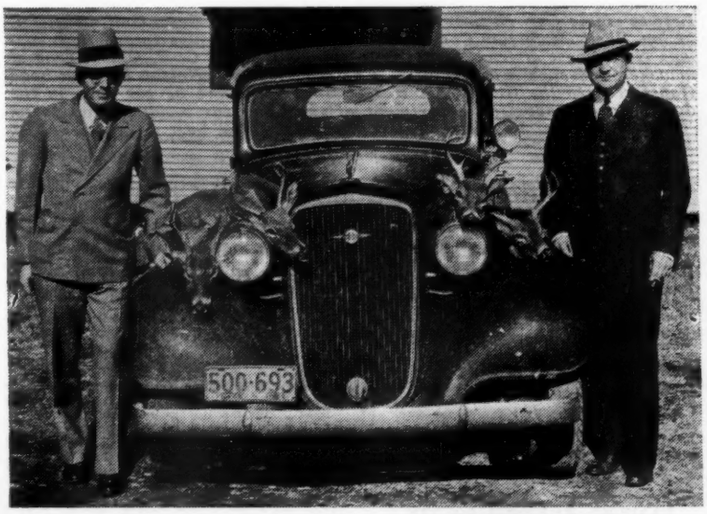
Smith & McDannald have set surface casing on a deep test for Superior Oil Producing Co. at Church Point, Louisiana, carried as No. 1 Newman. Location is approximately a mile distant from the Woodley Petroleum Co.'s well drilled earlier this year on this prospect. Same contractors have rigs on two new locations in the Bosco Field for the Superior, with a third rig drilling. Other rigs are: Two at Louise for Pure Oil Co.; one rig in the Cayuga area for the Tide Water and Texas Seaboard Oil companies; one rig at Roanoke, Louisiana, for the Shell Petroleum Corp.

Whitman, Inc., drilling contractors, have a rig running in East Texas for the Standard Oil Co. of Kansas. A. D. Whitman is president of the firm. The company has offices in the Esperson Building, Houston.

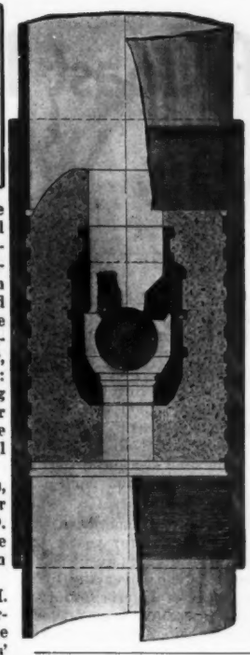
Jordan Drilling Co., comprised of H. B. Jordan, S. L. Jordan and S. M. Jordan, all of whom were members of the crew which brought in Boone Brothers' wildcat in Houston County several months ago, has contract and is waiting on location to be staked for No. 2 Ferguson State Farm for the Texas-New York Oil Co. and the Sunray Oil Co. Jordan has also set 2,000 feet of 7-inch O.D. casing above 7 feet of sand in another well for Boone Brothers in the Trinity Field. This well is an offset to Humble Oil & Refining Co.'s No. 2 Shaw.

Smith & Ramsal have taken a contract to drill a 3,500-foot test for E. M. (Pete) Compton near Dacus, Montgomery County, close to the county line. Location is on 200 acres near the center of the J. B. Wheeler Survey. This well may be carried to the Wilcox sand if production is not found higher. It is approximately a mile from the Smith-Cooper well which was taken over by Seagraves and Cooper and drilled to 4,-

(Continued on Page 238)



Seven men—twelve bucks . . . not bad, not bad! Mason County paid off last week to a hunting party comprised of John R. Suman, vice president of the Humble Oil & Refining Co.; John Blue, general manager of the Standard Oil Co. of Kansas; Harry Edwards, of Edwards Drilling Co.; Tom Bounds, assistant division superintendent of the Humble company in the Tyler area; George O'Leary, vice president and sales manager of the Houston Oil Field Material Co.; O. Holloway, tool pusher for the Humble company; and J. F. Burdette, tool pusher for the Edwards Drilling Co. Three of the bucks came home with Harry Edwards and George O'Leary, left and righ above, when they arrived in Houston the other morning. That's right, three; the fourth head to the right is just a head. O'Leary said the buck was going so fast that, even though the shot cut its head off, they never could find the carcass—believe it or not! Whereupon Edwards added that the deer had such a tough experience with the drought last summer that most of them are carrying spare grub in a knapsack these days when they get more than a mile away from grass.



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Gulf Coast Interest Is Centered on Friendswood Area, Where Stanolind Has Reached Sand

By F. L. SINGLETON
Gulf Coast Bureau, The Oil and Gas Journal

HOUSTON, Tex., Dec. 24. — Interest on the Gulf Coast is centered on the Friendswood area, northern Brazoria County, where Stanolind Oil & Gas Co. is drilling plug on its No. 1 J. W. Surface in the W. T. Hughes Survey No. 2. The test is bottomed at 5,990 feet, with 9⅝-inch casing cemented at 5,975 feet. The operators are reported to have encountered top of the sand section at 5,948 feet, and top of the saturated sand at 5,975 feet.

The Friendswood area has been a known geophysical prospect for years. It takes in the extreme northeastern part of the county, and extends over the line into the southern part of Harris County. Several interesting tests have been drilled in the district, all being completed as dry holes.

Northeast of No. 1 J. W. Surface, Texana Oil Co.'s No. 1 Goar in the Sarah McKissick Survey, Harris County, was abandoned at a total depth of 6,070 feet. Northwest in Brazoria County, Cullen and West's No. 1 Settegast in the W. D. C. Hall Survey was abandoned at 6,296 feet. The latest test to be drilled in the area was C.&R.G. Drilling Co.'s No. 1 Frank Truska in the H.&T.C. Survey, Section 7, which is standing shut down at a total depth of 7,890 feet. Due to the fact that No. 1 J. W. Surface is reported to be running several hundred feet higher on top of the Discorbis and Marginulina formations than the above abandoned tests, close-in royalty is reported to be selling as high as $400 per acre. The test is reported to have topped the Discorbis at 5,260 feet, the Heterostegina at 5,650 feet and the Marginulina at 5,820 feet. The nearest production to the test is the Manvel Field, located southwest in the same county.

May Extend Field

In the Manvel Field, Brazoria County, Texas Co. completed its No. 12 Houston Oil Field Association in Lot 5, A.C.H.&B. Survey, for 550,000 feet of dry gas daily through a twelve-sixty-fourths-inch choke with tubing pressure 720 pounds. Casing pressure was sealed off. The hole is bottomed at 4,115 feet, with 7-inch casing cemented at 3,958 feet. William H. Winn's No. 1 A. Exacoustedes, Section 23, H.&T.B. Survey, topped oil sand at 3,686 feet, and the operators have cemented 7-inch casing at that depth. It is bottomed at 3,716 feet. It is north of the above test, and if a producer it will extend the field a short distance to the north.

Another wildcat test in the southeastern part of Waller County being drilled by Stanolind Oil & Gas Co. has reached the expected pay horizon in the Cockfield formation, and is being watched with interest. It is No. 1 J. W. Thorp in the J. M. Bennett Survey No. 100. It topped the Cockfield at 6,158 feet and late in the week was coring in sand below 6,410 feet. At this depth it is 252 feet in the Cockfield which places it at the right depth to pick up the producing horizon. The operators have encountered several showings of gas from 6,379 to 6,410 feet.

In the county, but on the San Felipe Dome, Seaport Oil Co.'s No. 1 J. W. Avery, in the William Cooper Survey, southwestern corner of the county, is setting screen and liner, and will probably be tested during the week. The test was cored to a total depth of 2,975 feet and is reported to be in oil sand. On the southeast flank of the dome, Texas Co.'s No. 1 George W. Rheman in the William Cooper Survey, cemented 13⅜-inch casing at 950 feet and is waiting on cement to set. W. H. Holland and others have made location for their No. 1 M-K-T R.R. of Texas. It is southeast of the discovery well in the McGregor, McFarland Survey.

Gulf to Make Another Test

Gulf Production Co.'s No. 7-C Kirby, Cleveland Field, Liberty County, is preparing to make another drill stem test at a total depth of 5,845 feet. On a drill stem test last week it tested 8 thribbles of salt water from 5,847-5,853 feet. The operators plugged back to 5,650 feet and cored a new hole to its present depth. The wildcat test of Turnbull and Irwin's No. 1 Lynott and Buffam, 11 miles north of Liberty, in the Hardin district, made its third attempt for production during the week, but was unsuccessful. The hole probably will be abandoned. Location is in the James Robeson Survey. It is bottomed in the Cockfield formation at 7,511 feet.

In the Kittrell Field, South Houston County, Boone Brothers' No. 2 Trinity State Bank, in the Charles McEllis Survey, drilled plug and was bailing to test. The test is bottomed at 2,000 feet with 7-inch casing cemented at 1,992 feet, and is expected to make the fourth producer for the field. Humble Oil & Refining Co.'s No. 3 Shaw, made a drill stem test from 1,944-1,981 feet and tested 1,110 feet of oil and 41 feet of drilling mud through a three-eighths-inch choke on top and bottom. The operators are coring ahead.

Marathon Oil Co. has made location for a wildcat test in Polk County. It is 990 feet from the northwest and southwest line of the J. D. Thomas Survey.

In the Splendora area, Montgomery County, Alpha Petroleum Co. has made a deal with Bryce McCandless and others to drill a well on the McCandless and others 500-acre Cora L. Neff lease in the Walker County School Land Survey.

Completion Extends Field

East of the Hankamer Field, Liberty County, Gulf Production Co.'s No. 3 Crow and Jacobs, H.&T.C. Survey No. 21, is due to be completed this week. The completion of this test will extend the producing limits of the field three-quarters of a mile east.

In the southeastern part of Fort Bend County, Benedum & Trees' No. 1 Jacob Hensler, a wildcat in the Charles D. Sayre Survey, northwest of Pilant Lake, is shut down at a total depth of 6,500 feet in salt water sand, and the operators are reported to be making an electrical coring test.

After making three unsuccessful drill stem tests, the wildcat test of Atkins & O'Neil's No. 1 Hodges, which encountered a showing of oil last week at 5,281 feet, is coring ahead below 5,927 feet in shale. The test will be carried to the contract depth of 6,000 feet and the operators will make an electrical coring test in an attempt to locate the best looking sand. Location is in Block 1, I.&G.N. Survey.

Louisiana Drilling Program

The Bosco Field, Acadia and St. Landry Parishes, Louisiana, was assured an extensive drilling program for the coming year when Superior Oil Producing Co. received drilling permits for 13 tests. Permits received for tests were: No. 4 E. Comeaux, No. 1 C. B. Hermandez, Nos. 4, 5 and 6 P. O. Hermandez, all in Section 34-8s-3e, and No. 1 A. Allemond, No. 2 Malancon, and No. 2 E. M. Kahn, all in Section 33-8s-3e, and five in St. Landry Parish. No. 6 W. V. Larcade, in Section 26-8s-3e, No. 7 W. V. Larcado, No. 1 E. Comeaux (A lease), now rigged up, and No. 4 U. T. Iseringhausen, in Section 35-8s-3e, and No. 2 Sidney Fall in Section 27-8s-3e.

One producer was completed in the field. It was No. 2 Larcade in Section 26-8s-3e, completed for an initial production of 506 bbls. in 24 hours through a twelve-sixty-fourths-inch choke, with tubing pressure 1,350 pounds from a total depth of 8,692 feet.

In the Gillis area, Calcasieu Parish, the outpost test of Fohs Oil Co.'s No. 1 O. H. Castle, a mile south of Union Sulphur Co.'s No. 2 Barbe, the discovery well, has apparently missed the producing horizon found in the discovery, as it is down below 6,881 feet in shale, and has not encountered any showings that would warrant setting casing.

Gulf Refining Co. has abandoned its deep wildcat test in Beauregard Parish, Section 25-6s-12w, at a total depth of 8,354 feet.

Another 8,000-Foot Wildcat

Five miles northeast of Starks, Calcasieu Parish, Humble Oil & Refining Co.'s No. 1-B Industrial Lumber Co., a wildcat test, has been added to the numerous 8,000-foot tests now drilling on the Gulf Coast. Late in the week it was drilling in shale below 8,247 feet. Location is in Section 27-8s-12w. Two miles west of the town of Vinton the wildcat test of Plummer and McDaniel's No. 1 Coburn-Hood is drilling below 4,895 feet in shale. It is located on a block of approximately 5,000 acres. Another wildcat in the same parish is being watched with interest. It is Wheeler Oil Corp.'s No. 1 Gabbert, a mile east of Chloe, Section 28-9s-7w. It is drilling in sandy shale below 6,965 feet.

In the Roanoke Field, Jefferson Davis Parish, the two deep tests of Humble Oil & Refining Co. and Shell Petroleum Corp. are coring below 9,000 feet, with no shows of oil or gas.

Two producers are due to be added to the Iowa Field, Jefferson Davis Parish, during the week. Shell Petroleum Corp.'s No. 10 Hyde, Section 13-9s-7w, is bottomed at 6,940 feet and the operators were drilling plug late in the week. The same company's No. 11 Hyde in the same section is in oil sand at 6,920 feet.

Left to right: Carl E. Lee, general drilling superintendent, Gulf Coast Division, Shell Petroleum Corp.; L. J. Nelson, drilling superintendent Louisiana Gulf Coast district, Shell Petroleum Corp., and C. E. Olsen, general manager Gearench Manufacturing Co., Houston. Mr. Nelson has just been transferred to the Gulf Coast from California, where he has been in the drilling and production department of the Shell for a number of years. His headquarters will be at Iowa, La.

Wildcat Operations on Gulf Coast

Week Ending December 22

RACCOON BEND—AUSTIN COUNTY

Humble O. & R. Co.'s No. 5-X Helmuth, 315 ft. at R/A from W line, 313 ft. at R/A from SW line, 96 ft. from No. 3. Drlg. shale 2,765 ft.

Humble O. & R. Co.'s No. 11-X Woodley. Drlg. shale 4,858 ft.

Humble O. & R. Co.'s No. 1 Hill, Wm. C. White Sur. Location.

Humble O. & R. Co.'s No. 10 Arthur Marten, 315 ft. from SE and 313 ft. from SW line of lease, Wm. C. White Sur. Rigging up.

Humble O. & R. Co.'s No. 8-X Sanders, 788 ft. at R/A from N line, 250 ft. at R/A from most easterly line, Wm. C. White Sur. Abd. 3,220 ft.

DANBURY—BRAZORIA COUNTY

Shell Pet. Corp.'s No. 7 Blakely-Winston, 63 deg. 11 min. E, 5,540 ft. N, 26 deg 49 min. W, 200 ft. from SW cor. of Blakely-Winston 560-ac. tract, H.T.&B. Sur. Drlg. lime 4,892 ft.

Shell Pet. Corp.'s No. 3 Haury, 800 ft. SE of No. 2 in line with No. 2 and No. 1 Blakely-Winston, H.&T.B. Sur. No. 13. Drlg. hard sand, sticky shale 7,210 ft.

DAMON MOUND—BRAZORIA COUNTY

Gulf Stream, Inc.'s No. 1 Cave Heirs, 160 ft. from N line and 60 ft. from E line of Lot C, Blk. 50, A. Darst Sur. Drlg. shale 1,540 ft.

Esco's No. 1-D Wisdom, 25 ft. from S and W lines of Blk. D, Lot 5, A. Darst Sur. S.D. 1,563 ft.

Intercoastal Oil Co.'s No. 12 Wisdom, 90 ft. from N line and 35 ft. from W line of Lot A, Blk. 51, A. Darst Sur. T.D. 2,923 ft.; preparing to pump.

MANVEL—BRAZORIA COUNTY

Bowles & Barsodi's No. 1 Norvell Investment Co. in center of Lot 47, H.&T. Sur., No. 23. Drlg. sandy shale 3,950 ft.

Texas Co.'s No. 13 Houston Oil Field Association, 990.5 ft. N, 48 deg. W, 265 ft. N, 42 deg. E of S cor. of Lot No. 21, A.C.H.&B. Sur. No. 91. Derrick.

Texas Co.'s No. 2 O. L. Rash, 990 ft. S, 48 deg. E, 330 ft. S, 42 deg. W of N cor. of lease, Thomas Sproggins Sur. Rig up.

Texas Co.'s No. 1 Dolmolin, 330 ft. N, 48 deg. W, 330 ft. S, 42 deg. W, from E cor. of Charles O'Donnell Sur. No. 74, H.T.& B. Sur. Drlg. shale and lime 3,203 ft.

Texas Co.'s No. 1 Joe Grace, 200 ft. S, 200 ft. W of NE cor. of lease, Lot 7, Charles O'Donnell Sur. No. 74. Rig up.

Texas Co.'s No. 12 Houston Oil Field Association, 2,475 ft. S and 330 ft. E of NW cor. of Lot 5, A.C.H.&B. Sur. 7-in. csg. 3,958 ft.; T.D. 4,115 ft.

Texas Co.'s No. 15 Houston Oil Field Association, 441.9 ft. W and 247.5 ft. S of NW cor. of Lot 7, A.C.H.&B. Sur. Rig up.

Texas Co.'s No. 1 Wray, 330 ft. N, 42 deg. E of W cor. of lease, Thos. Sproggins Sur. Drlg. sand 2,770 ft.

WEST COLUMBIA—BRAZORIA COUNTY

Sterling O. & R. Co.'s No. 4 Hogg, 200 ft. S of No. 1, 50 ft. from W line of lease, Martin Verner Sur. Drlg. 1,300 ft.

(Continued on Page 234)

Probability of Shallow Crude Production Indicated Near Hudson Bay Junction

By VICTOR LAURISTON
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Dec. 24.—Prospects of crude oil production at shallow depth are indicated near Hudson Bay Junction in northern Saskatchewan, where Trail Blazer Oil & Gas Co.'s No. 1, SW Section 32-44-3w2, is resuming from 620 feet after getting what looks like an asphaltic oil sand, corresponding to the tar sands of northern Alberta.

Following the reported strike, a Regina, Saskatchewan, group headed by A. G. MacKinnon, K.C., sent Dr. D. F. MacDonald, professor of geology of St. Francis Xavier University at Antigonish, Nova Scotia, to make a survey of the area. Doctor MacDonald's detailed findings have not been made public, but his general report indicates good prospects for crude oil over a large area in northern Saskatchewan. The potential field extends east across the inter-provincial boundary into Manitoba, and Winnipeg interests are reported planning to start drilling on the Manitoba side.

Several tests are in progress or in prospect in the older areas of Saskatchewan.

North Turner Valley

In the North Turner Valley Field, Royalite Oil Co.'s No. 26, LSD 5, Section 23-20-3w5, is rigged ready to spud, and is closing in the derrick for winter drilling. Further south and west, John Phillips and associates' No. 1, LSD 16, Section 16-20-3w5, has spudded and is below 55 feet.

In Section 28-18-2w5, South Turner Valley Field, Carleton Royalties' No. 1, LSD 2, which started with around 12,000,000 feet of wet gas and 125 bbls. of naphtha from the Madison lime at 6,125 feet has frozen to 350 feet off bottom, shutting off the flow. Efforts are being made to thaw the well by closing in and building up back pressure. It will later be given a shot of 600 quarts.

In the same section, several tests are in the lime. Spooner Oils' No. 5 Anaconda, LSD 1, is below 5,954 feet, 440 feet in the limestone, and getting close to the main porous horizon. It has more than 3,000,000 feet a day of wet gas from the lime and is taking light crude production from the brown sand of the Dalhousie.

On the west side of the section, British Dominion Oil & Development Corp.'s No. 4, LSD 6, is below 4,350 feet with 10-inch casing hanging at 4,200 feet and has just gone through its fifth show of light crude.

In Section 21-18-2w5, Union Freehold Oil Corp.'s No. 1, LSD 8, is redrilling with rotary 225 feet off the old obttom, after cementing back to overcome caving. The location is about a half mile south of Highwood-Sarcee's No. 1, the southernmost producer in the field.

On the east side of the South Turner Valley, Merland Oil Co.'s No. 2, LSD 13, Section 27-18-2w5, is below 2,250 feet with casing set at 1,950 feet. Further north, Livingston Syndicate's No. 1, LSD 5, Section 34-18-2w5, is below 3,170 feet. Nolan-Hungerford Royalties' No. 1, same LSD, is shut down at 3,257 feet.

On the Aldersyde structure, east of the Turner Valley Field, Rachmen's Gas & Oil Co.'s No. 1, LSD 16, Section 13-20-28w4, is cleaning out and bailing drilling fluid, preparatory to production test at 6,263 feet.

In the Forest Reserve west of Olds, Hunter Valley Oil Co.'s No. 1 McLaren, LSD 12, Section 13-31-10w4, is at 4,750 feet and running 10-inch casing.

On the Highwood-Sinclair structure south of Turner Valley, Canadian Royalties' No. 1 Banner, LSD 6, Section 34-17-3w5, has run 16-inch casing to 635 feet, sidetracking lost bit. Location is approximately 6½ miles southwest of Highwood-Sarcee's No. 1, the nearest producer in the Turner Valley Field.

On the Watson structure west of Lundbreck, Mar Jon Oil Co.'s No. 3, LSD 3, Section 4-10-2w5, is below 740 feet and carrying 18-inch casing. A small gas show has been struck.

In the Alberta end of the international Red Coulee Field, Vanalta's No. 6, LSD 3, Section 4-1-16w4, finished dry below 2,300 feet, and has been abandoned. It was apparently off structure.

In the Cardston district, southern Alberta, Franco Oils' No. 1, LSD 6, Section 5-3-25w4, is below 1,010 feet with a small gas show.

Canadian Seaboard Oil Co. recently completed a series of deep tests in the St. Lawrence Valley in Quebec, drilled in conjunction with the Alberta Gas & Fuel Co., a Henry L. Doherty subsidiary. An early test at Ste. Angele de Laval finished at 5,282 feet. It got a small gas flow, around 250,000 feet a day, in the top of the Trenton limestone, but a shot of 400 quarts failed to increase the production. A later test at St. Gerard was drilled to 6,161 feet without getting production. The most recent test, finished on December 12, was near St. Gregoire, in Nicolet County. It finished in the Trenton limestone at 6,030 feet with the hole in good shape and no water. Only small gas shows were encountered.

All the deep drilling has been on the south side of the St. Lawrence where the Trenton limestone apparently lies in an extensive syncline. On the north shore, shallow tests drilled in the vicinity of Lanoraie in recent years got some gas around 800 feet or less.

Ontario Fields

In the De Clute Field, Kent County, Ontario, Union Gas Co.'s No. 26, E Lot 142, Talbot Road, Raleigh Township, is at 1,500 feet with gas flow estimated 1,500,000 feet a day. Gas Producers Syndicate's No. 2 Gilbert Pardo farm, 2½ miles west of Cedar Springs, is below 1,185 feet, after getting the first gas show, about 5,000 feet a day, at 1,149 feet. It will finish early next week.

In the Dawn Field, Lambton County, Union Gas Co.'s No. 79, Lot 25, Concession 9, Dawn Township, finished at 2,028 feet with a shot production around 45,000 feet a day. It is being pulled and plugged.

East of Alvinston, a test for oil on the Oke farm in the river flats finished dry around 500 feet, and has been abandoned.

In the Eden Field, on the Norfolk-Elgin County line, E. P. Rowe's No. 7, Wilson farm, Bayham Township, finished below 1,300 feet with a flow of 360,000 feet a day.

CANADIAN CRUDE IMPORTS

OTTAWA, Canada, Dec. 22.—Official figures show that in the first 10 months of 1934 imports of crude petroleum into Canada increased 82,000,000 gallons over the same period last year. Of the Canadian imports, 74 per cent came from the United States.

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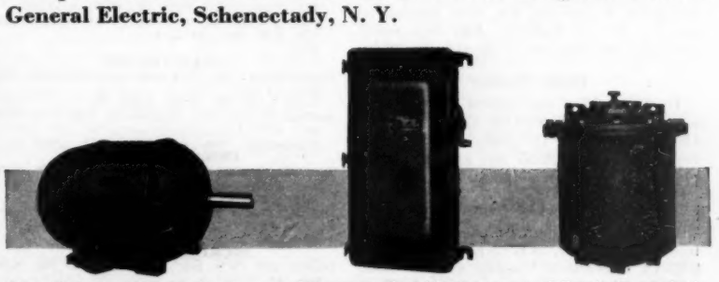

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020-25

GENERAL ELECTRIC

Russell County Fields Lead in Completed Work in Kansas in Past Week; Big Well in Reno

By JAMES McINTYRE

Russell County took the lead in the number and productiveness of wells completed in Kansas in the past week, but the largest individual producer completed was a 4,400-bbl. well in the Burrton Pool in Reno County by Olson Drilling Co. and Shell Petroleum Corp.

Estimated Production

Estimated daily average production of Kansas for the week ending December 22 and for the preceding week follows:

	Barrels	
	Dec. 22	Dec. 15
Hollow	6,075	6,075
Rits-Canton	12,325	10,100
Voshell	5,700	5,500
Johnson	1,290	1,865
Sedgwick County	7,775	7,660
Nikkell	4,300	3,500
Ellsworth County	3,540	2,902
Barton County	1,552	1,115
Rice County	15,430	13,500
Reno County	13,290	12,570
Ellis County	385	377
Kingman County	1,185	1,296
Stafford County	1,610	1,653
Russell County	8,460	10,285
Greenwood County	11,500	11,500
Butler County	19,000	19,000
Others pools	18,383	17,977
Total Kansas	131,800	126,975

Barber County

Southern Drilling Co. and others have rig up for a wildcat test, No. 1 Davis, 460 feet north and 40 feet west of C Section 13-34-15w, Barber County.

Elk County

Theta Oil Co. completed No. 2 Walker, NE cor. Section 27-31-10, Elk County, in pay at 1,337-53 feet, which yielded an initial production of 30 bbls. after an acid treatment.

Superior Oil Co. set 10-inch pipe at 551 feet in No. 4 Rorick, SW SE SE Section 22-31-10.

Sedgwick County

Empire Oil & Refining Co. completed No. 1 G. H. Russell, SE NE SE Section 17-28-1e, Sedgwick County. It pumped 240 bbls. in 24 hours after an acid treatment at 3,282-98 feet.

Fisher & Lauck's No. 11 Trustee, NE NE SE Section 19-27-2, pumped 60 bbls. initially from Chat at 2,948-58 feet and was completed.

Magnolia Petroleum Co.'s No. 10 Wheeler and others, 995 feet south and 822 feet west of NE cor. Section 19-27-2, swabbed 125 bbls. from Chat at 2,940-50 feet.

Shell Petroleum Corp. made a location for No. 9 Lygrisse-A, NE SW NE Section 15-26-2. Tom Johnston and Atlantic Oil Producing Co.'s No. 1 Cook, NE NE SW Section 20-28-1e, were building rig. Magnolia Petroleum Co. was moving in rig for No. 4 Robbins, 330 feet south and 355 feet east of C Section 20-28-1e.

Butler County

C. C. Sheldon and others' No. 1 Wilson, NE NE NW Section 12-25-3, Butler County, pumped 117 bbls. in 24 hours from Chat at 2,668-85 feet and was completed. It had been acidized.

Greenwood County

Bisagno and others finished a dry hole in No. 2 Stecker, NW NE NW Section 6-25-13, Greenwood County, at 1,697 feet.

T. K. Simmons and others' No. 9 Clopton, CEL SE NW Section 18-22-11, was dry and abandoned at 2,206 feet. Mississippi lime was topped at 2,185 feet.

Henderson and Holden were drilling at 725 feet in No. 5 Harlan, 785 feet south and 660 feet east of NW cor. Section 34-22-11.

Reno County

Olson Oil Co. and Shell Petroleum Corp.'s No. 4 Goering-B, SW NW NW Section 35-23-4w, in the Burrton Pool, Reno County, made a potential flow of 4,417 bbls. in 24 hours from Hunton lime at 3,577-91 feet and was completed. Same operators made a location for No. 3 Duckworth, NW NW NE Section 23-23-4w.

Kessler, Their and Skelly Oil Co. have rig up for No. 1 Bigger, NE SE SW Section 29-23-6w.

Harvey County

Shell Petroleum Corp.'s No. 6 Voth, 1,309 feet south and 1,327 feet east of NW cor. Section 4-22-3w, Hollow Pool, Harvey County, pumped 907 bbls. in a 24-hour potential test from Hunton lime at 3,488-3,523 feet.

Shell Petroleum Corp.'s No. 1 Neufeldt, SE SW NW Section 8-22-3w, deepened from 3,207 feet to Hunton lime at 3,447-84 feet and acidized, pumped 197 bbls. in 14 hours.

Shell Petroleum Corp. made a location for No. 7 Voth, NW SW NW Section 4-22-3w.

Imo Oil & Gas Co. and others' wildcat, No. 1 Sperling, SE NE SE Section 23-22-2w, gauged 22,800,000 feet of gas at 2,986 feet. The gas was killed off and the well was drilling at 3,009 feet.

Derby Oil Co.'s No. 1 Billeau, SW SE SW Section 5-22-1w, was completed. It pumped 25 bbls. of oil and 75 bbls. of water from Hunton lime at 3,306-21 feet.

L. W. Prunty and others made a location for No. 1 Davis, NE cor. Section 6-22-1w.

McPherson County

Dickey Oil Co.'s No. 1 Tull, NE NE SW Section 13-19-3w, McPherson County, flowed 160 bbls. of oil in nine hours from Chat at 2,957-87 feet. It also produced gas at the rate of 5,000,000 feet per day.

Shell Petroleum Corp. made a location for No. 4 Griffin-B, 1,314 feet from north and 330 feet from west lines of the NE Section 14-19-2w, and for No. 5 Griffin, 330 feet from north and 1,025 feet from west lines of NE Section 14.

Barton County

Stanolind Oil & Gas Co. made a location for No. 3 Scheuffler, 660 feet from west and 1,950 feet from south lines of SE Section 9-20-11w, Barton County. Same company's No. 5 Hauser, SW SW NE Section 16-20-11w, had 1,300 feet of oil in the hole from Siliceous lime at 3,288-93 feet.

Rice County

Sinclair Prairie Oil Co. completed No. 1 Wallace, NE NE SW Section 29-19-9w, Chase Pool, Rice County. It pumped 1,519 bbls. in 24 hours from Siliceous lime at 3,209-18 feet, acidized.

Allison & Fitzwilliams and others made a location for a wildcat test, No. 1 Stumps, NW NW SW Section 4-18-10w.

Yingling and others' wildcat No. 1 Maupin, NW SW SW Section 1-18-8w, pumped 104 bbls. of oil and 2 bbls. of water in 24 hours from Viola lime at 3,233-39 feet. It had been drilled to 3,245 feet, but ran into water at 3,243 feet, which filled the hole.

Ellsworth County

Twin Drilling Co. and others completed their pool-opening wildcat, No. 1 Rolfs, SW NW SW Section 13-17-9w, in Ellsworth County. It pumped 526 bbls. in 24 hours from Siliceous lime at 3,200-05 feet, total depth.

Bradley & Scanlon have cellar dug for No. 1 Nienke, NE NW NW Section 13-17-9w, about three-quarters of a mile northeasterly from the discovery well. Two offsets to the discovery well are drilling, Texas Co.'s No. 1 Rolfs, NW SW SW Section 13, drilling below 300 feet, and Atlantic Oil Producing Co.'s No. 1 Rolfs, SE NE SE Section 14-17-9w, a west offset, drilling below 2,200 feet.

Marion County

Harwood Oil Co. has rig up for No. 4 Cowman, SE NE SW Section 11-17-4, Marion County.

Russell County

Darby Petroleum Co.'s No. 1 Jarus, NW SW NE Section 16-16-12w, Russell County, a wildcat, had 1,200 feet of oil in the hole from the top of Siliceous lime at 3,348 feet, total depth. Six-inch casing had been set at 3,340 feet. No test had been made.

Stanolind Oil & Gas Co. and Gypsy Oil Co.'s No. 2 Frevert, SE SE NE Section 21-16-10w, had Siliceous lime at 3,317-22 feet and the hole filled 3,200 feet with oil in one hour and later swabbed 556 bbls. of oil in six hours.

Wolf Creek Oil & Gas Co. and others made a location for No. 1 Penn Mutual land, SW cor. Section 22-15-15w.

Sinclair Prairie Oil Co.'s No. 1 Sellens, NW cor. Section 36-15-13w, swabbed 95 bbls. in four hour from Oswald lime at 3,103-10 feet, acidized.

Aylward and others' No. 1 Mills, NW NW NE Section 4-14-15w, pumped 95 bbls. in 12 hours at a total depth of 3,090 feet, after an acid treatment.

Billings and others have ponds dug for No. 3 Witt, NW NW SE Section 4-14-15w.

Central Petroleum Co. acidized its No. 1-B Benso, C E half E half SW Section 4-14-15w, in Oswald lime at 3,020-78 feet, and later pumped 8 bbls. of oil per hour. The company has ponds dug for No. 2, NE NE SW Section 4-14-15w.

Stanolind Oil & Gas Co.'s No. 4 Benso, NE NW SW Section 4-14-15w, was completed. It pumped 504 bbls. in 24 hours from pay at 3,064-69 feet.

The Texas Co.'s No. 1 Neidenthal, NE SE NE Section 23-14-15w, pumped 314 bbls. of oil and 32 bbls. of water from Siliceous lime at 3,244-55 feet, acidized. The well was completed.

Tom Palmer's No. 2 Killian, SW SW NW Section 27-13-14w, was acidized in Siliceous lime at 3,268-75 feet and pumped 1,606 bbls. of oil in 24 hours. It was completed.

Aylward and Skelly Oil Co. has rig up for No. 2 Killian, NE SE NE Section 28-13-14w.

Wildcat Operations in Kansas

Week Ending December 22

(Descriptions are East unless marked otherwise)

BARBER COUNTY

Sam Jarvis et al's No. 1 Morrisse, C SE NE Sec. 23-30-10w.
Rig.

Southern Drlg. Co. et al's No. 1 Davis, 460 ft. N and 40 ft. W of C Sec. 13-34-15w.
Rig.

BARTON COUNTY

D. I. Hall et al's No. 1 Arnold, SE SE SW Sec. 19-18-15w.
Rig.

Murphin and Davis' No. 1 Lanterman, NW SE Sec. 15-19-11w.
Siliceous lime 3,332 ft.; T.D. 3,355 ft.; 2,800 ft. of oil in hole.

C. L. Price et al's No. 1 Ehrlich, NW SE Sec. 10-16-13w.
T.D. 360 ft.; fishing.

Treleaven & Brimm et al's No. 1 Haas, SW cor. Sec. 30-18-15w.
10-in. 2,399 ft.; drlg. 2,565 ft.

Walter Shearen et al's No. 1 Kemplar, SE NE NE Sec. 31-18-11w.
S.D. 300 ft.

BUTLER COUNTY

Gaines et al's No. 1-A McKinley, NE NE SE Sec. 19-29-4.
Acidized K.C. lime 1,890-1,950 ft.; flowed 25 bbls. oil, 25 bbls. wtr.

Seibel, Great Basin Oil Co. et al's No. 1-A McKinley, NE SE Sec. 19-29-4.
K.C. lime 1,888-1,915 ft.; will acidize.

F. H. Unruh et al's No. 1-A Joseph, SE SW NW Sec. 18-25-4e.
Rig.

CLAY COUNTY

Seidel Bros.' No. 1 Younken, C S½ SE NW Sec. 21-9-4.
8-in. 1,378 ft.; drlg. 1,400 ft.

Severs et al's No. 1 Meyers, NE NW NW Sec. 4-10-4.
Mississippi lime 1,775 ft.; T.D. 1,834 ft.

COWLEY COUNTY

Ben Gralapp's No. 1 Kukuk, SW SW NW Sec. 6-33-4.
8-in. 2,225 ft.; drlg. 2,465 ft.

Otstot et al's No. 1 Eckhardt, SE NW Sec. 15-35-6.
Spudded and S.D.

DICKINSON COUNTY

Dutch Oil Co.'s No. 1 Phillips, C NE NW Sec. 15-15-1e.
T.D. 2,496 ft.; U.R. 8-in. csg.

ELK COUNTY

Lassen's No. 1 Ferguson, SE SE SW Sec. 21-30-8.
1,760,000 ft. of gas 2,056-5 8ft.; 5-in. csg. 2,160 ft.; sand 2,169-72 ft.; hole full oil.

ELLSWORTH COUNTY

Twin Drlg. Co. et al's No. 1 Rolfs, SW NW SW Sec. 13-17-9w.
Siliceous lime 3,200-05 ft.; pumped 526 bbls. in 24 hrs.; comp.

GREENWOOD COUNTY

Kite et al's No. 1 Jamison, SW SE NE Sec. 30-26-13.
S.D. 525 ft.

HARVEY COUNTY

O. J. Connell et al's No. 1 Roth, SW cor. Sec. 16-22-2w.
Spudded and S.D.

Imo O. & G. Co. et al's No. 1 Sperling, SE NE NE Sec. 23-22-2.
22,800,000 ft. gas 2,986 ft.; killed gas; drlg. 3,009 ft.

Wenzel et al's No. 1 Schrag, NW SE Sec. 24-22-3w.
T.D. 587 ft.; S.D. for csg.

KINGMAN COUNTY

Magnolia Pet. Co.'s No. 1 Bartholomew, SE SE SW Sec. 30-27-4w.
13-in. set at 211 ft.

McPHERSON COUNTY

Lario O. & G. Co.'s No. 1 Base, SW cor. Sec. 22-20-2w.
Rig.

C. W. Lamer et al's No. 1 Rolander, NE NE NW Sec. 8-18-2w.
Set 6-in. 3,080 ft.; T.D.

Roth-Faurot et al's No. 1 Bestwater, SE SW SE Sec. 23-20-1w.
T.D. 3,048 ft.; U.R. 8-in. csg.

Stafford et al's No. 1 Krehbiel, NW NW SE Sec. 27-21-3w; (O.W.D.D.).
C.O. at 2,980 ft.

NESS COUNTY

Texas Co. and Gypsy Oil Co.'s No. 1 Goodman, C SW SW Sec. 21-19-23w.
T.D. 4,052 ft.; R.U. standard tools.

OSAGE COUNTY

Jim Edwards' No. 1 Detrich, C NW SE Sec. 21-14-15.
Spudded and S.D.

OSBORNE COUNTY

Carmen & Hershey's No. 1 Frits, C NE NE Sec. 9-10-14w.
6-in. 3,702 ft.; drlg. 3,757 ft.

PRATT COUNTY

Atlantic Oil Prod. Co.'s No. 1 Prentice, C SE NW Sec. 18-28-14w.
Rigged up.

RENO COUNTY

Foraker et al's No. 1 Hiett, SE SW NE Sec. 34-24-4w.
Drlg. 1,280 ft.

McBride et al's No. 1 Popp, SW SW NE Sec. 32-24-4w.
Wilcox 3,879-82 ft.; H.F.W.; S.D.

Kessler, Theis and Skelly's No. 1 Bigger, NE SE SW Sec. 29-23-6w.
Rig.

Privett Drlg. Co.'s No. 1 Crotts, NE NW NE Sec. 27-26-10w.
8-in. 3,090 ft.; drlg. 3,095 ft.

RICE COUNTY

Allison & Fitzwilliams et al's No. 1 Stumps, NW NW SW Sec. 4-18-10w.
Location.

Foraker, Nickerson et al's No. 1 Lyons, SE NW Sec. 27-20-8w.
S.D. 1,060 ft.

(Continued on Page 233)

Michigan Expected to Break Its Crude Production Record With 10,000,000 Bbls. for the Year

By PAUL A. ELLIOTT
Staff Correspondent, Michigan Fields

MUSKEGON, Mich., Dec. 24.—Based on actual production for the first 11 months to December 1 and upon partially estimated average daily production for the first three weeks of the last month, Michigan's total will top the 10,000,000-bbl. mark in 1934 with daily production for the week ended December 15 averaging 28,317, or about 600 bbls. less than the federal allowable for December 1.

Production for November by pools was as follows: Porter, 17,820 bbls.; Yost, 629; Greendale, 3,715; Vernon, 2,229; Leaton, 540; Montcalm, 285; Ogemaw, 333; Lapeer, 20; Saginaw, 113; Muskegon, 294, and Oceana, 219.

Mason County has been added with production of a single Traverse well by R. C. Lentz, of Muskegon, who recently has started drilling another test in the Logan Township, Mason County area.

The new Beaverton Township, Gladwin County, Pool where the discovery well is credited with daily production of about 30 bbls., also should be added to the list to complete a total of 13 fields.

Daily production for the week ended December 15 was computed as follows: Porter, 20,466 bbls.; Yost, 682; Greendale, 3,715; Vernon, 1,670; Leaton, 540; Montcalm, 265; Ogemaw, 333; Saginaw, 113; Lapeer, 20; Muskegon, 294, and Oceana, 219 bbls. for a daily total of 28,317 bbls. To this should be added the single Mason County producer at 7½ bbls. and the Beaverton discovery well at 30 bbls. a day.

Midland and Ogemaw Counties shared honors during the past week, the former leading in successful completions and the latter in new locations. Four of the five completions of the week aggregating about 1,200 bbls. of new initial are located in three Midland County townships, while 10 of the 15 new locations are for new tests in the Ogemaw County area where a considerable drilling play is now being centered.

Midland County

Outstanding new development of the week was the recompletion of W. Hunter Atha's No. 1 Moran, C E SE Section 28-12n-1e, Mount Haley Township, Midland County, about 3 miles east of Dundee production in the big Porter Township, Midland County, Pool. The Moran well, first drilled into the Dundee pay sands in October as a disappointingly small producer, was increased to about 300 bbls. a day by acid treatment.

Completed with an initial flow of 5 to 10 bbls. a day, the Moran last week flowed 260 bbls. in 20 hours after being reopened following acid treatment and was seen as the discovery well of a new field. Other tests in eastern Porter Township indicate the Moran has opened a possible new producing section.

Mr. Atha immediately announced plans to drill two new tests on holdings in Mount Haley Township, one on the Mary La Londe lease in Section 27 and the other on the Rosie and Archie Beougher lease in Section 25, the latter about 3 miles east of the new producer. Daily Crude Oil Co. also spudded in on the No. 1 Martin, Section 28, Mount Haley Township, north and west of the Moran well on a location for which a state permit recently was issued.

Pure Oil Transportation Co. is reported considering early extension of its pipe line gathering system to the Moran well.

Three other successful completions were made in Jasper and Porter Townships during the past week. The largest was the Pure Oil Co.'s No. 3 Bond-Root, C NE NE Section 3-13n-2w, Jasper Township, which flowed 678 bbls. initial at a total depth of 3,434 feet. Dundee pay sands were reached 7 feet higher than in the Pure's No. 1 Bond-Root completed the previous week for an initial daily production of 354 bbls. Both wells are in the Yost area.

Pure Oil Co. also completed its No. 8 A. C. Wyant, NE NW SW Section 16-13n-1w, Porter Township, at 3,425 feet for an initial daily flow of about 100 bbls. in the Dundee.

Garfield Oil & Gas Co.'s No. 1 Mabel Finch, SW SW SE Section 21, also Porter Township, topped the Dundee at 3,395 feet and was completed at 3,433 feet for a reported initial of about 100 bbls. a day.

Columbia Oil & Gas Co.'s No. 1 Henry Northrup, NE SE SE Section 19, is the only Porter test expected to be completed over the Christmas holidays as a possible west extension.

McClanahan Oil Co. struck an unexpectedly heavy flow of oil and gas in the upper Traverse in its No. 2 Eliza Breu, Section 20, Porter Township, and caught fire slightly damaging the rig. The drill topped the Traverse at 2,711 feet but drilling will be continued to the Dundee though it appeared to be good for about 100 bbls. a day in the upper formation.

Mecosta County

The only other completion of the week was the Gordon Oil Co.'s No. 1 D. Engleman, C SW NE Section 9-15n-8w, Martiny Township, Mecosta County, which was dry, plugged and abandoned after failure to strike gas in the Michigan Stray sands at a total depth of 1,503 feet.

New Locations

Despite wintry weather state permits for 15 new locations in seven townships of four counties were issued during the week of December 12 to 19.

Weber Oil Co. took out five permits in West Branch Township as follows: No. 1 Victor Nelson, SW SW SW Section 26-22n-2e; No. 1 Frank Bumchen, NW NW SW Section 27; No. 1 Reuben Horsell, Sr., SE SW SW Section 28; No. 1 Mrs. Anna M. Schick, NW NW NE Section 29, and No. 1 Robert J. Zahm, NE NW NW Section 34. Ide Oil & Gas Co.'s No. 1 Harry Shubert, SE NE NW Section 19, and Allen Park Oil & Gas Corp.'s No. 1 H. DeCoster, NW NW SW Section 19, were the other new West Branch locations.

Two new Mills Township, Ogemaw County, locations were placed under permit by the Melling Oil & Gas Co. in the No. 2 State of Michigan, NE SE NW Section 6-21n-3e, and McClanahan Oil Co.'s No. 1 Buffalo Land Co., NE SW NW Section 7. Frank C. Patterson and Otto F. Louis took out a permit for the No. 1 William J. Price, SW SW SE Section 31-22n-3e, Churchhill Township, Ogemaw County.

Three new Isabella County locations are for the Pure Oil Co.'s No. 1 Lucy Baker, SW NW SE Section 15-13n-5w, a new wildcat in Fremont Township, for the Sherman Drilling Co.'s No. 2 George Carrothers, S half SW Section 32-15n-16w, Sherman Township and for O'Neal-Sarver's No. 1 Bogan, C NE SE Section 31-16n-4w, Vernon Township.

Pure Oil Co. also took out a permit for the No. 3 Harry H. Peek, SW SE NW Section 16-13n-1w, in the proved Porter Township, Midland County, Pool.

Hal-Be-Oyle & Gas Corp.'s No. 1 Wallace Henry, C SW SE Section 1-13n-8w, Hinton Township, Mecosta County, is another new test for which a permit was issued.

Beaverton Township Wildcat

Materials for immediate starting of a new Warren Township, Midland County, wildcat about 7 miles east and south of the Whitehill-Kintner discovery well in Beaverton Township, Gladwin County, were moved in by Howard L. Foster and J. V. Wicklund on a block of acreage assembled by C. F. Miller and S. L. Andre. The new test will be located SE NE SE Section 13-16n-2w. Rig also has been moved in for a new test on the M. A. Sams lease in the west half of Edenville Township, Midland County, between North Bradley and Beaverton about 8 miles south and 2½ miles east of the Beaverton discovery.

M. F. Whitehill, of Washington, Pa., who drilled the discovery Kintner No. 1 in Section 11, Beaverton Township, has moved in two derricks and probably will start offsetting the discovery well to the south. Dougherty & Markey and the Alzee Brothers also have made locations in Tobacco Township just east of the Kintner well, which encountered oil in commercial quantity at about 3,850 feet two months ago. Located in previously untested wildcat territory, the Kintner is expected to result in an important drilling play during 1935.

Michigan Cities Natural Gas Co. is planning another test on its Cook lease in Broomfield Township, Isabella County.

E. R. Prince and Don M. Stainbrook, of Mount Pleasant, also have leased a tract of several thousand acres near Houghton Lake where they plan to drill. This is in a territory in Roscommon County which Dr. Virgil R. D. Kirkham, Saginaw geologist, recently predicted would be a favorable new area for oil development in north central Michigan.

Central Ohio Area Had 22 Completions; Nine Were Reported in Kentucky

By GEORGE A. WHITNEY
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Dec. 24.—During the week there were 22 completions in the Central Ohio Field, 10 oil wells, with initial of 331 bbls., 6 dry holes and 6 gas wells. The best oil well was Mid-Gas Co.'s No. 2 John W. Grant farm, Section 11, Reading Township, Perry County, which produced 97 bbls. initial, at a total depth of 3,144 feet. Werhle Gas Co. drilled in a gas well in No. 1 on the Alma A. Board farm, Section 36, Thorn Township, at 2,777 feet. In Reading Township, same county, Kachelmacher Oil Co. is drilling No. 8 on the Hemlock Coal Co.'s property. Westerman Brothers and others are drilling No. 3 Harriett Gilmore farm, Section 6, same township. Hopewell Oil & Gas Co. is drilling No. 5 on the Michael Emmert farm, Section 9, same township, and Marshall, Bauman and others have a rig up on the A. J. Nautz farm, same section.

In Athens County, Ohio Fuel Gas Co.'s No. 2 H. A. Pinkerton farm, Section 36, Lodi Township, is a gas well at 728 feet. Same company is drilling No. 1 A. H. Grim farm, fractional Section 25, Lodi Township.

In Delaware County, Charles Wise drilled a dry hole at a total depth of 2,939 feet, in Section 3, Orange Township, on the Herman D. Vance farm.

In Coshocton County, Pure Oil Co.'s No. 13 on the G. W. Crawford farm, Section 25, Pike Township, produced 89 bbls. initial at a total depth of 2,995 feet.

In Licking County, Preston Oil Co.'s No. 3 Frank Beckford farm, Section 18, Fallsburg Township, produced an initial of 53 bbls. at 3,042 feet.

In Ashland County, Ohio Fuel Gas Co.'s No. 1 on the E. A. Beavers farm, Section 12, Green Township, is a gas well.

In Medina County, Kemrow Co.'s No. 2 J. H. Grittner farm, Section 24, Brunswick Township, produced an initial of 10 bbls. at 405 feet. Oko Oil & Gas Co.'s No. 30 S. W. Brinker farm, Lot 6, Chatham Township, produced an initial of 15 bbls. at 325 feet. Hubert & Allis' No. 1 C. L. and West Allis farm, Lot 55, same township, produced 4 bbls. initial at 537 feet. Harold L. Pearsall's No. 27 W. M. Clifford farm, Lot 15, same township, showed an initial of 2 bbls. at 452 feet. W. J. Dempsey and others' No. 2 Davis & Ferguson farm, Lot 3, York Township, produced 2 bbls. initial at 375 feet. In Montville Township, Ohio Fuel Gas Co. has a gas well on the Fred O. Roshon farm, Lot 29, Montville Township, at 3,242 feet.

Guernsey County

In Guernsey County, Preston Oil Co.'s No. 16 on the Reah Lent farm, Section 10, Millwood Township, produced 16 bbls. initial at 1,323 feet. Roy Hammond and others' No. 1 James A. Linton farm, Section 26, same township, was a dry hole at 1,355 feet. Ohio Fuel Gas Co.'s No. 3 on the W. W. Woodburn farm, Lot 19, Willis Township, was a gas well at 1,540 feet. Ohio Fuel Gas Co.'s No. 4 Bacon-Lent farm, Lot 22, same township, is a gas well at 1,334 feet. In Wheeling Township, the Local Co. has abandoned its location on the James Sager farm, for No. 2. Bland Brothers are drilling No. 4 on the R. A. McBride and others farm, Section 5, Cambridge Township, and Four Leaf Clover Co. is drilling No. 1 on the R. S. Grimes farm, Section 15, Monroe Township.

In Meigs County, Williams Brothers' No. 2 on the Bryant and Jennie Saxon farm, Lot 17, Rutland Township, is a dry hole, having struck water at 833 feet. N. S. Oil & Gas Co.'s No. 2 on the A. B. Cross farm, Section 24, Sutton Township, was a dry hole at 1,704 feet. James Sampson is drilling on the James E. Stobart farm, Section 12, same township.

In Delaware County, Chester Wise's test on the Herman D. Vance farm, Section 3, Orange Township, was a dry hole at 2,939 feet.

In Lorain County, McCandless & Bell's No. 1 on the Columbus Life Insurance Co.'s property, Lot 65, Eaton

(Continued on Page 225)

Sixteen Completions in the Lower Eastern Fields; Southeast Ohio Had Most New Production

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Dec. 24.—West Virginia is producing far less than its January allowable. In Ohio the major purchaser of Pennsylvania Grade crude has curtailed purchases 20 per cent and requested runs of only that amount. Runs in the Southwest Pennsylvania Field and Middle district (Butler to Bradford) are receding from the midsummer peak. In the upper district or Bradford fields, runs have increased to the point of almost absorbing the entire state allowable, and it presents a problem.

There were 16 completions in the lower Eastern fields and 4 dry holes. Nine were gas wells and seven producers with an initial production of 190 bbls. a day. Southeast Ohio had three completions which accounted for most of the production. In West Virginia, through an Authority, the U. S. Government completed a gas well, and is drilling another.

SOUTHEAST OHIO

In Coshocton County, Murphy Petroleum Co. completed No. 6 on the Wheeler Mossholder farm in Section 6, Perry Township. It was drilled in the Clinton sand at 3,147 feet and after shot, 37 bbls. were swabbed from it the first day.

In Lorain County, Shaffer and Daugherty completed a fair test on the Columbus Mutual Life Insurance Co. lease, southwest quarter of Eaton Township. It is a Clinton sand producer at 2,546 feet and produced 40 bbls. the first day after shot.

In Muskingum County, NW Section 7, Jackson Township, Pure Oil Co. completed a second test on hte Jared Ashcraft heirs farm in the Clinton sand at 3,222 feet. It produced 60 bbls. the first day after shot.

In Noble County, Thurman L. Rich and C. W. Rich drilled a test on the Mary Secrest farm in the NW Section 19, Seneca Township, through the Berea grit to 1,467 feet. The sand was badly broken with a very light showing of oil and will not make a producer from that formation. Only about 5 gallons of oil in 48 hours were brought to the surface.

SOUTHWEST PENNSYLVANIA

There was only one well completed in Southwest Pennsylvania. In Springhill Township, Greene County, Peoples Natural Gas Co. drilled deeper old No. 1 on the Jesse Yeager farm to 3,176 feet. Top of the Gordon sand was at 3,093 feet with gas showing at 3,134 feet. The volume is about 300,000 feet a day and bottom of the sand at 3,156 feet. There was a showing of gas on top of the sand.

In Muddy Creek Township, Butler County, where James H. Duff and John T. Galey are drilling the Oriskany sand test on the Lehigh Portland Cement Co. lease, the sand line has been recovered from the hole but the bailer and tools are still held in the cave. While the tools reached 4,646 feet, the hole is now closed several hundred feet above that.

In Richhill Township, Greene County, Lewis & Co. have completed a rig on the Samuel Chess farm. In Whitely Township, Carnegie Natural Gas Co. has reached 2,810 feet in deepening No. 1 on the Thomas Brewer farm.

In Amwell Township, Washington County, Carnegie Natural Gas Co. is drilling at 1,725 feet in the second test on the M. C. Manon farm. It has reached 936 feet on the R. M. Carrons farm. Wise Oil & Gas Co. is down 2,683 feet on the Jacob Snider farm.

In East Findley Township, Washington County, Natural Gas Co. of West Virginia reached the top of the Big Injun sand at 2,010 feet on the J. C. Sansom farm. There was a showing of about 148,000 feet of gas at 2,128 feet. The tools are now at 2,185 feet. This company has rigged up on the G. W. Tilton farm and has a location on the Thomas F. Ealy farm.

In South Franklin Township, New Oil & Gas Co. is drilling at 1,975 feet on the Anna Chamber farm. Carnegie Natural Gas Co. is down 2,938 feet in deepening No. 1 on the S. A. Dague farm.

WEST VIRGINIA

There were three small producers completed in West Virginia along with one fair producer in the Pike Pool in Clay district, Ritchie County. Here, J. C. Smith and others completed No. 3 on the Lewis Hanlon farm in the Injun sand at 1,930 feet, rated at about 50 bbls. a day. No. 2 on this farm was good for 25 bbls. a day. In Murphy district, on the waters of Big Island Creek, Harry Harper completed No. 13 on the L. J. Beckner farm in the Mitchell sand making about 10 bbls. a day.

In Roane County, on Buffalo Creek in Curtis district, Reedy Oil & Gas Corp. completed No. 3 on the G. A. Knopp farm in the Salt sand, rating about 1 bbl. a day.

In Wood County, Lemley Farm Oil Co. completed a second test on the Sarah Lemley farm in Walker district and on Pleasant Hill, as a producer in the Maxton sand, good for 5 bbls. a day. It was drilled through the Injun sand which was dry and plugged back.

Gas Wells

Though not the largest for the week, the entrance of the U. S. Government into the gas business is interesting. In Union district, Putnam County, about 1½ miles west of Red House, the Putnam County Homestead Administration completed a test on the Red House Homestead in the Shale at a depth of 2,584 feet. It is a gas well gauging about 448,000 feet a day with a showing of about 1 bbl. of oil a day in the Berea sand at 2,100 feet. This Authority is building a rig in the vicinity for a second test. It is reported this gas will be used in the Red House Homestead, the much publicised community development and not as a utility yardstick.

In Cabell County, H. H. Baker Gas Co. completed a test on the George H. Midkiff farm in McComas district in the Maxon sand at 1,340 feet. It is a gas well gauging about 431,000 feet a day. In Guyandotte district, R. H. Adkins and others completed a test on the J. G. Ramsey lease in the Berea at 2,722 feet. It gauges about 150,000 feet a day.

In Calhoun County, L. P. Bickel completed a fair gas well on the Martha Stump heirs farm, No. 15 as mapped, or a test on the P. S. Stump division. It was drilled in the Salt sand and initially is good for about 2,000,000 feet a day. In Lee district, Southeastern Oil & Gas Co. completed No. 4 on the John Slider farm in the Injun sand at 1,972 feet, gauging about 126,000 feet a day.

In Kanawha County, Godfrey L. Cabot, Inc., completed No. 7 on the Campbells Creek Coal Co. lease in Malden district in the Weir sand at 2,340 feet. It is a very light gas well.

In Lincoln County, Harvard Gas Co. completed the deep test on the Standard Fuel Co. property in Washington district in the Shale at a depth of 4,400 feet. It gauged about 116,000 feet a day after shot.

In Wirt County, on Parrish Fork Run in Clay district, W. C. Patterson completed No. 21 on the John C. Hale farm in the Salt sand as a light gas well.

There were three dry holes in the State. In the northern and western tip, in Brooke County, N. A. Martin & Son drilled a test on the Cecil Zetty farm in Cross Creek district through the Berea sand to 1,300 feet. It was dry.

In Lewis County, the McCall Drilling Co. drilled a test on the Jesse B. Wiseman farm in Freemans Creek district to 600 feet and it was dry. In Wetzel County, G. N. Yoho and others drilled a test on the George A. Smith farm in Proctor district to 2,507 feet through the Gordon sand and it was likewise dry.

Drilling in West Virginia

In the Oriskany sand district in Elk district, Kanawha County, S. B. Avis, trustee, has reached 3,600 feet and progress has been retarded due to a frozen water line on the W. T. Copen farm. This is about 1,000 feet above the sand. Clyde Oil & Gas Co. has reached 1,135 feet on the F. W. Shinn farm. V. C. Smith and others are down cementing at 1,310 feet on the island at the mouth of Coopers Creek or the Matheney, Wertz and others lease. Benedum and Trees have rigged up on the Mary C. Wingfield farm. Elk River Oil Co. has rigged up on the W. T. and J. H. Goshorn farm. No further progress has been made on the B. F. Botkins farm.

In Cabell County, on the waters of Fudges Creek in Grant district, Shale Gas Co. has started drilling on the B. C. Beckett farm. It is about 1½ miles south of the test on the L. B. Weatherholt farm. In this district, West Virginia Gas Co. is deepening No. 1 on the Sarah J. Kendall farm and has reached 2,425 feet. In McComas district, R. H. Adkins is down 1,760 feet on the F. F. Starcher farm. Fairfax Gas Co. is drilling at 1,160 feet on the Leonard Paugh farm. Carney Gas Co. has reached 1,550 feet on the James Mills farm.

In Calhoun County, Howard Jarvis and others started drilling on the J. S. Rigers farm in Washington district. Everett Starcher has started drilling on the Lubana J. Jarvis farm. Litton Gas Co. is down 1,260 feet in No. 1 on the same farm. Jarvis Gas Co. is building a rig on the C. L. and G. W. Jarvis farm. Henderson Oil Co. is down 1,725 feet on the Parsons heirs farm. Carroll and Hamilton have reached 535 feet on the E. C. Knotts heirs farm. Godfrey L. Cabot, Inc., is shut down testing at 1,308 feet No. 3 on the G. W. Truman farm. In Lee district, M. F. Crawley is drilling on the Lestern and Riggs and others lease and is down 400 feet. Mudlick Oil & Gas Co. is drilling at 1,200 feet the second test on the G. W. Bennington farm. In Sherman district, Creed Barker and others are down 550 feet on the A. R. Stump farm. Godfrey L. Cabot, Inc., is drilling on the Henry Knight farm below 600 feet. F. F. McIntosh has reached 1,200 feet in No. 2 on the Seymore Settle farm. In Center district, Howard Brothers are shut down at 1,900 feet testing on the L. F. Norman farm, a No. 1.

In Clay County, F. F. McIntosh is drilling on the Peabody Coal Co. tract and has reached 400 feet. This is in Pleasant district. In Otter district, Benedum and Trees are shut down in the Berea shells on the Andrew Tanner farm.

In Marion County, Maxon Oil & Gas Co. has reached 3,085 feet on the Ash heirs farm in Mannington district. The Thirty Foot sand was at 3,023-43 feet with a show of oil at 3,037 feet. In this district, Monroe and Laughlin are down 2,500 feet in No. 3 on the A. D. Wells farm. In Marshall County, McIntire and others have a location on the J. W. Henry heirs farm in Franklin Township.

In Raleigh County, Godfrey L. Cabot, Inc., is drilling two wells. On the Beaver Coal Co. lease in Slab Fork district, No. 6 has reached 730 feet and No. 7 is down 360 feet.

In Ritchie County, there are no new reported locations. In Murphy district,

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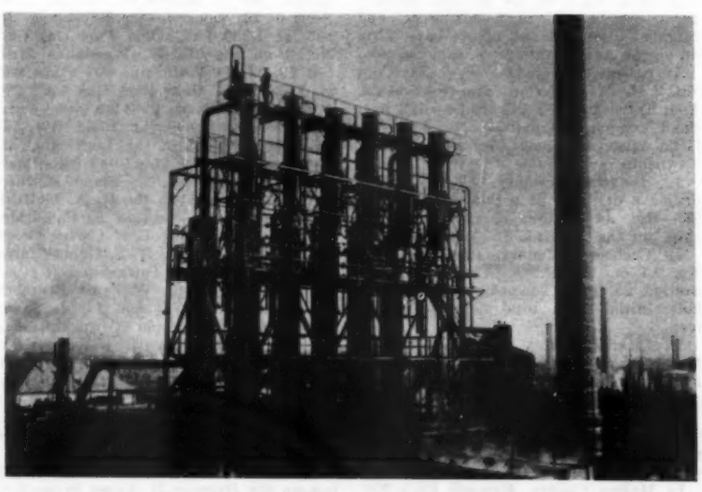
Fractionating Towers in Rumanian Refinery



Processing about 3,500 bbls. of local crude daily, the 4,000-bbl. refinery of the Petrolmina S.A.R. de Mine si Petrol at Ploesti in Rumania is producing several grades of light and heavy gasoline, kerosene, gas oil and residual products.

The plant essentially consists of seven shell stills hooked together into a continuous battery, six of the seven stills being equipped with a fractionating tower. The reflux of each tower is lead into the next still.

The Petroleum Building of Chicago is leasing unusually fine office space to members of the oil industry and allied companies at low rentals. We earnestly solicit investigation of the new Chicago home of the Oil Men by all companies having headquarters in the city. - - - - - for particulars apply to Arthur Rubloff & Co., Agents - - 616 South Michigan Avenue.

Two Wells in Rainbow Field and Shallow Producer in Camden Area Mark the Week in Arkansas

By J. R. CRUMPTON
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Dec. 24.—Two good producers in the Rainbow Field, Union County, Arkansas, featured the drilling results in this division during the past week. Sharing the spotlight with this area in the South Arkansas district was the completion of a shallow production wildcat west of Camden, in Ouachita County, which, though not yet put on the pump, indicates a fair producer. The several wildcats throughout the division developed nothing of interest, but disappointing failures were listed.

ARKANSAS

H. L. Hunt, Inc.'s No. 11 E. F. Gregory, Section 10-17-14, is flowing 1,638 bbls. of pipe line oil through 2-inch tubing from 3,319 feet. The second good Rainbow Field producer, Skelly Oil Co.'s No. 1 W. H. Perdue, Section 10-17-14, is flowing 1,659 bbls. through 2½-inch tubing and 1¼-inch choke from 3,359 feet. Both of these wells have shown only about 2 per cent sediment, and the latter shows about 2 per cent salt water. The oil is of 30.2 gravity and the casing pressure registered 460 pounds. Several other wells are near completion.

H. L. Hunt's No. 3 Gregory, an old well drilled deeper to the Taylor sand, set 5-inch casing at 3,347 feet with sand encountered from 3,350-59 feet. The well is flowing 175 bbls. of pipe line oil but has not yet cleaned itself out. The S.H.A. Oil Co.'s No. 2 Taylor, Section 10-17-14, is waiting on standard rig to pump with 2,600 feet of fluid in the hole, 20 per cent of which is salt water.

One of the outstanding disappointments was T. L. James & Co.'s No. 1-A W. H. Perdue, SE cor. NE NW Section 10-17-14. A drill stem test from 3,390 to 3,402 feet developed 6 fourbles of salt water and the crew is coring in water sand at 3,478 feet. The Alice-Sidney Oil Co.'s No. 8 Gregory, Section 11-17-14, is arranging to test sand cored from 3,379-86 feet. The extensions resulting from the completed wells were one-quarter of a mile southeast, one-half mile due south and a half mile northwest.

Smackover Area

There were two other completions in the South Arkansas district, both in the Smackover area. Lion Oil Refining Co.'s No. 10-A Flenniken, Section 10-16-15, is pumping 35 bbls. of oil and salt water from 2,408 feet. In the Ouachita area, L. L. McDonald's No. 1 J. A. Robertson, Section 25-15-16, was abandoned as a salt water well at 2,601 feet, T. J. Gaughan's No. 1 M. Bragg, Section 25-13-18, west of Camden in Ouachita County, logged the top of the Nacatoch at 1,332 feet, set 7-inch casing at 1,357 feet with the top of the sand at 1,353 feet. The hole is standing 1,200 feet in oil of 17.2 gravity with the total depth at 1,369 feet. An offset by the discovery operator is rigging up on No. 1 Cartier in Section 25-13-18.

A wildcat in the Calion area, Union County, is creating more than the usual excitement. Mrs. R. K. Jones' No. 1 J. Davis, Section 28-16-14, cored broken sand from 2,758-65 feet and set 7-inch casing at 2,755 feet. No drill stem test was made, but the oil show is reported to have been sufficient to warrant setting the casing. In Lafayette County, Douglas Lown is reported to be making arrangements to deepen his No. 1 Camp in Section 14-15-23 to the 4,000-foot level or to the upper Trinity series on his 10,000-acre block. The wildcat is in an area adjacent to the old Balcones fault, known in that locality as the Humble fault.

NORTH LOUISIANA

This district reported eight completions consisting of two oil wells, two gas wells and four dry holes. Old producing districts in Bossier and Caddo Parishes furnished the pumpers. In the former, Premier Investment Co.'s No. 17 Wyche, Section 14-19-11, Bellevue Field, is pumping 10 bbls. daily from 422 feet, and in the latter, Shreveport Oil Corp.'s No. 3-C Muslow, Section 4-20-15, is a 40-bbl. pumper from 2,162 feet. Caddo Parish listed one of the gas wells, the Leonard Co.'s No. 1 Green, Section 8-20-15, flowing 500,000 feet from 845 feet. Inabet & Pipes' No. 1-D Arbone, Section 23-19-3e, Ouachita area of the Monroe Field, gauged 2,000,000 feet of gas with 1,000 pounds rock pressure from 2,195 feet.

The four dry holes were in unproven territory. Plain Dealing Syndicate's No. 1 S. H. Bolinger, Section 35-23-13, in the northern part of Bossier Parish, topped the Blossom at 2,812 feet, tested dry in that formation and was abandoned at 3,207 feet. A Caddo Parish test, O. L. Hickman's No. 1 fee, Section 36-17-15, was abandoned at 2,758 feet. Two dusters were registered from Red River Parish. C. M. Cope's No. 1 Thomas, Section 34-13-8, was abandoned as dry at 2,375 feet. In Section 32-11-9, O. K. Oil Co.'s No. 1 Franklin Realty Co. was abandoned at a shallow depth after testing dry at 1,340 feet.

Nine new locations were staked in the North Louisiana district the past week. Among these were wildcats in areas which will be closely watched. About 6 miles southeast of the Haynesville Field, Claiborne Parish, J. K. Wadley has staked location for his No. 1 W. W. Moreland, NE Section 2-22-7. A block of 3,000 acres has been assembled, but no information has been given on the contract depth. In East Carroll Parish, Century Oil & Drilling Corp. of Chicago has derrick up to drill No. 1 Olivedell Planting Co. in Section 56-21-12. The test is located on a block of 18,000 acres about 7 miles northeast of a limited gas field in that parish. Other wildcats now drilling in the North Louisiana district follow: Bienville Parish, M. V. Duncan and others' No. 1 Hutton, Section 4-18-7, drilling in shale at 980 feet; Saline Drilling Co.'s No. 1 Pardee, Section 27-14-6, logged the base of the chalk at 2,508 feet and drilling at 2,577 feet; DeSoto Parish, Century Oil & Drilling Co.'s No. 1 Morton, Section 27-11-24, base of the chalk rock at 1,795 feet and drilling at 2,150 feet.

MISSISSIPPI

A second dry test in Greene County was recorded with the completion of United Gas Public Service Co.'s No. 1 Greene School Land in Section 16-1n-5w. The wildcat was abandoned as dry at a total depth of 5,441 feet.

Crude Production

Estimated daily area production for the week ending December 22 follows:

NORTH LOUISIANA

	Bbls.
Bellevue	550
Caddo light	4,820
Caddo heavy	1,740
Converse	1,290
Cotton Valley	445
DeSoto and Red River	1,450
Elm Grove	375
Haynesville	3,685
Holly	165
Homer	2,665
Pleasant Hill	190
Sarepta-Carterville	575
Urania	3,300
Zwolle	2,415
Total	23,665

SOUTH ARKANSAS

Champagnolle	3,810
El Dorado	2,300
Lisbon	360
Miller County	1,400
Nevada	935
Smackover light	2,310
Smackover heavy	18,940
Stephens	615
Urbana	2,265
Total	32,935

Wildcat Operations in Louisiana-Arkansas

(Rotary operations unless otherwise designated)

NORTH LOUISIANA

AVOYELLES PARISH

Bell Oil Co.'s No. 1 Woodley, 330 ft. S and W NE cor. NW Sec. 11-2n-5e.
Washing to bottom 1,700 ft.

BIENVILLE PARISH

M. V. Duncan et al's No. 1 Hutton, 400 ft. S, 330 ft. E, NW cor. Sec. 4-18-7.
Drlg. 980 ft.
Saline Drlg. Co.'s No. 1 Pardee, Sec. 27-14-6.
Drlg. 2,577 ft.

BOSSIER PARISH

Howard & Baird's No. 1 Gold, 150 ft. S and E, NW cor. Sec. 36-20-13.
S.D. for water 1,126 ft.
W. A. Kirkland's No. 1 Jarrett & McKeller, 330 ft. N and W, S cor. NW NW Sec. 3-21-13.
Set 10-in. 43 ft.
Plain Dealing Synd.'s No. 1 S. H. Bolinger, Sec. 35-?3-15.
Dry and abd. 3,207 ft.
Leonard Co.'s No. 1 Pearson, 250 ft. S and E, of C Sec. 22-21-14.
Coring 2,259 ft.
Scott & Howard's No. 1 Sherrill, Sec. 13-19-12.
Rigging up.
R. L. Skidmore et al's No. 1 Davis, Sec. 12-18-13.
Set 10-in. 100 ft.; S.D. 940 ft.

CADDO PARISH

Ark.-La. Tex. O. & G. Co.'s No. 1 LeRosen, 990 ft. E, 330 ft. N, SW cor. NW Sec. 15-20-15.
Set 6-in. 2,170 ft.
W. T. Bell et al's No. 1 Bostick, 1,820 ft. E, 660 ft. N, SW cor. Sec. 12-22-16.
S.D. for water, 2,540 ft.
Burkett O. & G. Co.'s No. 1 Lindholm, 400 ft. S and E, NW cor. NE SE Sec. 16-17-14.
S.D. 1,046 ft., repairing rig.
O. L. Hickman's No. 1 fee, 1,046 ft. S, 1,700 ft. E, NW cor. Sec. 36-17-15.
Dry and abd. 2,758 ft.
A. D. King, tr.'s No. 1 Roach, 641 ft. E, 375 ft. N, SW cor. SE Sec. 4-14-16.
S.D. 2,128 ft.
M. Rodgers' No. 4 Muslow, 1,495 ft. S, 1,270 ft. W, C Sec. 4-20-15.
Drlg. 1,700 ft.
G. R. Stevens' No. 1 Hart, 300 ft. N and E, SW cor. E½ SW Sec. 22-21-16.
W.O.S.R. 1,036 ft.
Shreveport Oil Corp.'s No. 2-C Muslow, 1,106 ft. E, 280 ft. N, SW cor. NW Sec. 4-20-15.
Drlg. 1,900 ft.
Shreveport Oil Corp.'s No. 3-B Muslow, 742 ft. E, 710 ft. S, NW cor. Sec. 4-20-15.
Comp. pumping 40 bbls., 2,162 ft.
Leonard Co.'s No. 1 Green, 150 ft. N and E, SW cor. NE SW Sec. 8-20-15.
Comp. 500,000 ft. gas 845 ft.
Leonard Co.'s No. 4 S. P. Harrell, 220 ft. N and W, SE cor. NW SW Sec. 2-21-16.
Drlg. plug 1,046 ft.
Tooke & Reynolds' No. 1 Levy, 330 ft. N and W, SE cor. NE Sec. 16-20-15.
Set 10-in. 40 ft.; drlg. 600 ft.
J. I. Roberts Drlg. Co.'s No. 1 Lane & Simon, 480 ft. E, 150 ft. S, NW cor. SW Sec. 15-20-15.
Set 10-in. 45 ft.; drlg. 1,050 ft.
Press & Lambert's No. 1 Lane & Simon, 166 ft. S, 1,124 ft. E, NW cor. SW Sec. 15-20-15.
Rigging up.
V. & F. Oil Co.'s No. 1 Etchison, 330 ft. N and E, SW cor. NE NE Sec. 16-20-15.
Set 6-in. 2,140 ft.

CATAHOULA PARISH

T. R. Hincy's No. 1 La. Central Lbr. Co., Sec. 32-9-6e.
S.D. for D.S. 1,541 ft.

DESOTO PARISH

L. H. Alderson's No. 1 Peek, SE cor. NW NE Sec. 25-11-12.
Dry and abd. 3,070 ft.
Bayou Pierre Oil Co.'s No. 1 B. Y. Wemple, C SE NE SW Sec. 14-12-11.
W.O.S.R. 2,731 ft.
Century O. & Drlg. Co.'s No. 1 Morton, 300 ft. N and E SW cor. SE NE Sec. 27-11-14.
Drlg. 2,150 ft.
W. T. Coleman's No. 1 Rambin Est., 300 ft. S and E, NW cor. SW SE Sec. 13-12-12.
Arranging to test 840 ft.
Dempsey & Manziel's No. 1 Thigpen, 375 ft. S, 330 ft. W, NE cor. SW NE Sec. 33-13-13.
Fishing for csg. 1,730 ft.
DeSoto Pet. Co.'s No. 1 B. Y. Wemple, C S½ SE NE SW Sec. 14-12-11.
S.D. 2,073 ft. (corrected).
E. L. Foster's No. 1 Youngblood, Sec. 9-11-14.
Drlg. 1,690 ft.
Hester et al's No. 1 Alston, 330 ft. S and W of center of Sec. 11-11-16.
Fishing 2,520 ft.
George Le Grande's No. 1 Vance 180 ft. N and W SE cor. SW Sec. 34-12-16.
Coring 2,560 ft.
Ben F. Smith's No. 1 Bonds, 200 ft. E, 500 ft. N, SW cor. Sec. 23-12-11.
Set 7-in. 2,568 ft.; coring 2,617 ft.
National Oils, Inc.'s No. 1 B. Y. Wemple, NW SW Sec. 14-12-11.
S.D. 120 ft.

LA SALLE PARISH

F. A. Trichello's No. 1 Urania, Sec. 3-9-1e.
S.D. 1,491 ft.

NATCHITOCHES PARISH

Benedum & Trees' No. 1 Carrier Est., 300 ft. N and W, SE cor. Sec. 6-8-7.
Coring 5,200 ft.
Clyde Crichton's No. 1 Friedman Est., 406 ft. N, 428 ft. E, SW cor. Sec. 52-7-6.
Coring 1,710 ft.
Jack Lent's No. 1 Brown Lbr. Co., 400 ft. S, 300 ft. E, NW cor. NE SW Sec. 27-9-13.
T.A. 2,470 ft.; old T.D. 3,002 ft.
Missouri Drlg. Co.'s No. 1 Brown Lbr. Co., 400 ft. N, 330 ft. W, SE cor. Sec. 5-10-10.
S.D. 1,033 ft.
Roy A. Raines et al's No. 1 Raines est., 330 ft. N and E, SW cor. Sec. 8-9-10.
S.D. 2,606 ft.

OUACHITA PARISH

Inabent & Piper's No. 1 D'Arbone, 660 ft. N and E, SW cor. Sec. 23-19-3e.
Comp.; gauged 2,000,000 ft. gas, 2,195 ft.
James A. Noe's No. 1 fee, 253 ft. N, 55 ft. W, C Sec. 2-18-3e.
Set 12½-in. 182 ft.; set 8-in. 740 ft.; Comp. for 1,250,000 ft. gas at 2,184 ft.

RAPIDES PARISH

Evars & Collingsworth's No. 1 Hickman, 330 ft. S and E, NW cor. Sec. 40-4-1e.
Dry and abd. 2,130 ft.
C. D. Loe, trustee's No. 1 Baird Est., SE cor. Sec. 40-5n-1w.
Rigging up.

RED RIVER PARISH

C. M. Cope et al's No. 1 Thomas, 330 ft. S and E, C Sec. 34-13-3.
Dry and abd. 2,375 ft.
O. K. Oil Co.'s No. 1 Franklin Realty Co., 100 ft. N and E, SW cor. SE SW Sec. 32-11-9.
Dry and abd. 1,340 ft.
Windsor Oil Co.'s No. 3 Jenkins, 1,905 ft. E, 660 ft. N, SW cor. Sec. 11-12-11.
Set 10-in. 55 ft.; set 8-in. 1,306 ft.; drlg. 1,472 ft.
Windsor Oil Co.'s No. 2 Jenkins, 1,980 ft. S and E, NW cor. Sec. 14-12-11.
W.O.S.R. 2,775 ft.

SABINE PARISH

H. J. Brothers et al's No. 1 Edwards, 300 ft. S and W, NE cor. SW NW Sec. 29-9-13.
Running tubing to test 1,887 ft.
R. B. Campbell et al's No. 1 Cook Land Co., 150 ft. N, 300 ft. W, SE cor. NW NW S.D. 2,130 ft.
Tested dry after acid; S.D.; W.O. 1,935 ft.
Helena Oil & Gas Co.'s No. 1-B Graham, 330 ft. S and W NE cor. NE NW Sec. 20-9-13.
S.D. 2,000 ft.
Lawson-Leavell's No. 2 Bank of Pleasant Hill, 330 ft. N and W, SE cor. NW NE Sec. 29-9-13.
Drlg. 1,620 ft.
Lawson-Leavell's No. 1 Whitney Corp., 330 ft. N and E, SW cor. NE SW Sec. 5-9-13.
Fishing for D.S. 3,005 ft.
Jack Lent's No. 1 Williams, Sec. 13-7-11.
Rigging up.
Dr. O. B. Hicks' No. 1 Neal, SE SW SE Sec. 18-9-12.
Set 10-in. 40 ft.

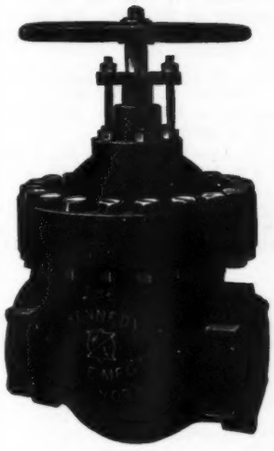
TENSAS PARISH

Schumacher, tr.'s No. 1 Curry, Sec. 39-11-12e.
Arranging to deepen 3,750 ft.

UNION PARISH

Interstate Nat. Gas Co.'s No. 1 Jenny, 1,950

(Continued on Page 236)



From 300-lb. test to 2500-lb. test

a gate valve for every oil and gas industry service

THE Kennedy line of valves for the oil and gas industry includes types for low, medium, extra heavy and extreme pressures, with screwed or flanged ends, and with stationary or rising stems. Each type is designed with special reference to service requirements in oil and gas fields, refineries, pumping stations, pipe lines and distribution systems. Bodies are heavily proportioned with exceptional strength and rigidity; disc mechanisms have thoroughly proven their easy and positive operation; stuffing boxes, flanges and pipe end hexes are exceptionally deep. Standardizing on Kennedy Valves is a convenience because it gives you a single source for all your valve needs. More than that, it assures dependable operation and lastingly reliable service no matter what may be the fluid, pressure, temperature or frequency of operation.

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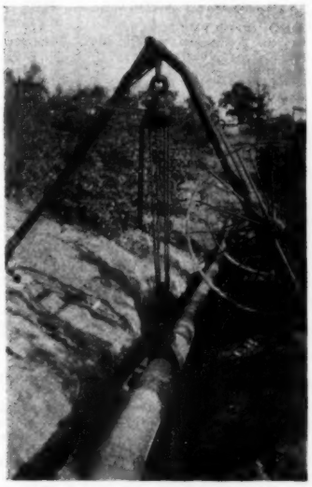
KENNEDY

VALVES~PIPE FITTINGS~FIRE HYDRANTS

Coffing Hoist Pulling Well Rods

WEIGHTS:

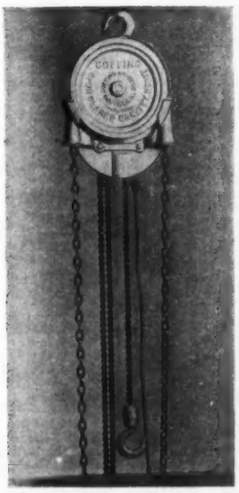
¾—14 lbs.
1½—25 lbs.
3 —34 lbs.
6 —65 lbs.



Model Z—6-ton Hoist Lifting 12" Pipe Line

WEIGHTS:

½—63 lbs.
1 —63 lbs.
2 —72 lbs.



Announcing Coffing's Free Chain, Ball Bearing, Spur Geared Gravity Hoist

These hoists are used for picking up rod lines to oil wells, skidding engines, boilers and cumbersome equipment into place, lifitng pipe lines, loading trucks, erecting rigs or wherever a lift or pull is needed. Notice the weights of these little giants taking the place of heavy, cumbersome, expensive equipment.

We also have a Load Binder built on the ratchet principle, well worth your investigation.

1. Light Weight.
2. Ball Bearing.
3. Free chain for quick adjustment.
4. No hand chain handled to lower load. Load lowered by gravity.
5. Lowering speed controlled by governor.
6. Load can be stopped in any position.
7. Will operate safely under 100% overload.

Sold by Jobbers of Mill and Oil Well Supplies

Manufactured by
COFFING HOIST COMPANY
Danville, Illinois

Oklahoma's New Pools Share Increased Output Permitted by Improved Demand for Crude

By JAMES McINTYRE

With Oklahoma's allowable production increased to 489,300 bbls. during the last half of December and all of January, some of the so-called wildcat pools were let in on the increased allowables by the state proration committee and the umpire.

The December and January allowables in barrels per day in the wildcat pools are as follows:

Field—	Dec.	Jan.
Edmond	400	500
Langston	300	300
Wilzetta	400	500
North Searight	300	300
Dill (Boley)	200	300
Polo	900	1,200
East Lovell	200	200
Fitts	1,500	4,000
Olympic	200	200
Goodman (Shawnee)	200	500
Gessman	100	400
Fish-Wilcox	800	1,000
Grisso	100	300
Lucien-Viola	....	100
Cleveland zone*	....	100
Springrose*	200	200
Highley*	100	100
Total	7,400	10,200

*In Oklahoma district.

Flat Increases

Flat increases were granted to all other fields and zones in the State with the exception of the Simpson and Fault Line zones in the Oklahoma City Field, which are held to near 100 per cent production. The following tabulation shows comparative allocations, with overproduction deducted, for December and January:

Field—	Dec.	Jan.
Wilcox zone	115,061	126,170
Simpson zone*	31,040	30,000
Fault Line*	1,320	700
Total Oklahoma City	147,321	156,870
Seminole et al	52,301	60,770
Maud	791	871
St. Louis	16,333	18,494
Asher-Wanette	970	1,067
Konawa	1,576	1,723
Sasakwa	687	763
Allen	6,450	7,068
Sasakwa Townsite	1,327	1,460
Calvin Sand-East Earlsboro	1,249	1,374
Tatums	5,733	6,306
Fish-Cromwell	2,986	5,000
Total Class B	122,663	135,596
Crescent	3,903	4,293
Lucien	7,806	8,340
Keokuk Falls	1,158	1,250
Simpson-Fish	194	213
Total Class C	13,061	14,096
South Burbank	9,700	9,874
Naval Reserve	7,454	8,199
Gray Pool	1,651	1,731
Total Class E	18,805	19,804
Grand total	269,590	295,666

The unprorated areas, including the Chandler Field, were allowed 175,111 bbls.
*Simpson and Fault Line zones in Oklahoma City Field are rated as Class B.

In the South Burbank Pool, Kewanee Oil & Gas Co.'s No. 4 Kennedy, SE NW SE Section 34-26-6, produced 1,150 bbls. the first 12 hours and settled, making 90 bbls. in the last hour, producing from Bartlesville sand at 2,792-2,870 feet. It was the only new well in the pool in the course of the week.

A new gas pool was opened in the Duncan district in Stephens County and the Gypsy Oil Co. definitely proved the existence of a pool in Section 10-1n-20w, near Altus, Jackson County, in southwestern Oklahoma.

Leasing in Coal County

Carter Oil Co. purchased a half interest in an 18,000-acre lease spread in Coal County around the towns of Tupelo and Centrahoma. Major portion of the spread is in Township 2-9e, including Sections 22, 23, 24, 26, 27, 28, 32, 33, 34, 35, 36, and Sections 6, 7, 8, 9, 10, 12, 16, 19, 20 and 21. In Township 2n-8e, the Sections include 12, 13, 14, 23 and 24. Other tracts included in the deal lie in Sections 1, 2, 3, 4-1n-9e, and in 31-2n-10e.

The Shell, Gypsy, Continental, Phillips, Texas, Mid-Continent, Sinclair Prairie and Magnolia are among the other companies that have acquired protective leases in Coal County, which seems destined for a thorough exploration after the first of the coming year. Small operators and others acquired these properties first in many cases and sold them at good profit to the majors.

Osage County

Skelly Oil Co. completed No. 8 Ducotey, SW cor. Section 15-25-5, in the South Burbank Field, Osage County, in Burbank sand at 2,674-2,740 feet. The well produced 2,148 bbls. in 24 hours, without a shot.

Skelly Oil Co.'s No. 6, SE SW SE Section 16-25-5, pumped 109 bbls. of oil in 24 hours from sand at 2,826-34 feet, which had been shot. It was not completed.

Kay County

Bay Oil Co.'s No. 1 Hudson, SW SW SE Section 14-28-3, northwest of the Mervine Pool, Kay County, was running 5-inch pipe, total depth 3,042 feet. It has sand at 2,960-93 feet, and flowed as high as 165 bbls. by heads in a 24-hour test, opening a new pool.

Noble County

No completions were recorded in the Polo Pool in Noble County, where nine wells are drilling.

The Sinclair Prairie's wildcat test of the Lucien Pool, No. 1 Cawood, C SW NW Section 27-20-2w, flowed an average of 860 bbls. per day for eight days. It had Misener sand at 4,955-63 feet; Sylvan shale at 4,963-70 feet, and Viola lime at 4,970-83 feet. Stanolind Oil & Gas Co. and Amerada Petroleum Corp. have cellar and pits dug for a south offset to the Sinclair Prairie's well. It is No. 1 Veitz, C NW SW Section 27-20-2w.

Creek County

First reports on operations in Creek County include the following: F. O. Aiken's No. 2 Harry, SE NE SW Section 35-18-8, drilling at 410 feet. L. B. Jackson's No. 1 Bear, SW SW SE Section 35-18-8, building rig. Dixie Drilling Co.'s No. 6 Walker, 660 feet from west and 1,200 feet from north line, SE Section 21-18-9, had Bartlesville sand at 2,623-70 feet, dry, and was drilling at 2,795 feet. Bay State Oil Co.'s No. 5 M. Tiger, NE NW SW Section 3-17-8, drilling at 710 feet. C. W. Titus' No. 7 Casey-A, NE SW SE Section 3-17-8, drilling at 500 feet. Doke & Hughes' No. 6 F. Watson, 330 feet east and 660 feet south of NW cor. Section 10-17-8, drilling at 1,260 feet. Murta and others' No. 1-A Fulsom, SW NW SW Section 8-16-11, drilling at 350 feet. Ed Smith and others' No. 1-A M. J. Tiger, NE SE NW Section 25-14-9, rig.

Midco Oil Co.'s No. 8 Land, CEL SE NW Section 12-18-11, was dry and abandoned at 1,450 feet. It missed the Red Fork sand.

Baker, Lynch & Etting's No. 2 Brown, NW SW NW Section 4-18-12, is a 10-bbl. completion at 1,748-56 feet.

Bay State Oil Co.'s No. 3 Lasley, SW SE NW Section 3-17-8, was completed a 75-bbl. initial producer at 1,380-1,415 feet.

Estimated Production

Estimated production by pools in Oklahoma for the week ending December 22 and for the preceding week follows:

	Barrels	
	Dec. 22	Dec. 15
Allen	7,050	7,100
Asher-West Asher	1,500	1,500
Burbank	9,100	9,100
South Burbank	9,250	9,250
Balance of Osage	27,000	26,000
Blackwell	4,750	4,800
Bristow-Slick	9,750	9,750
Crescent	3,675	3,600
Cromwell	4,500	4,400
Cushing-Shamrock	13,250	13,250
Chandler district	6,000	6,000
Duncan district	4,150	4,250
Fish	7,675	6,775
Fitts	3,000	3,550
Gray	2,075	2,300
Graham	3,460	3,500
Healdton	9,200	9,200
Hewitt	4,800	4,800
Holdenville	2,200	2,300
Keokuk	2,300	1,375
Konawa	1,650	1,900
Lucien	8,085	8,775
Marshall-Lovell	1,000	1,000
Oklahoma City	162,075	165,425
Papoose	1,250	1,250
Sasakwa and Townsite	1,425	2,325
Sholem-Alechem	4,100	4,100
Seminole Field:		
Bowlegs	10,175	10,250
Carr City	5,800	6,075
Earlsboro	9,450	8,875
East Earlsboro	9,500	9,350
South Earlsboro	975	900
Little River	13,000	13,075
East Little River	525	700
Maud	1,175	1,325
Mission	2,950	3,150
Seminole	8,975	10,075
East Seminole	1,075	1,100
Searight	2,325	2,700
Total Seminole	65,925	67,575
St. Louis-Pearson	21,175	22,075
Tatums	5,750	5,500
Tonkawa-Garber-Thomas	6,100	6,250
Wewoka	4,400	4,500
Yale-Jennings	4,750	4,750
Other pools	59,225	58,825
Total Oklahoma	481,535	487,050

Payne County

Deep Rock Oil Co. completed No. 2 Harris, SW SW NE Section 9-18-5, north of the city of Cushing in Payne County. It is an 85-bbl. well after having been deepened from 3,530 feet to pay at 3,569-99 feet.

Tulsa and Wagoner Counties

C. W. Mechling's No. 1 McIntosh, SW NE NW Section 13-17-14, in the Leonard district, Tulsa County, was dry and abandoned. It had dry Wilcox sand at 1,665-79 feet and 1,700-26 feet, and a show of oil and gas in the Hominy-Tyner at 1,837-55 feet, total depth.

J. E. Murphy's No. 1-A Moody, SW

Wildcat Operations in Oklahoma

Week Ending December 22

NORTHERN OKLAHOMA

BECKHAM COUNTY

Fred Coogan et al's No. 1 Shelton, SW cor. Sec. 33-10-25w.
Rigged up and S.D.

CADDO COUNTY

H. W. Lee et al's No. 1 Stacey Ferrell, SW NE NE Sec. 3-6-13w; (2,000-ft. test).
T.D. 990 ft.; fishing.

Denver Prod. & Ref. Co.'s No. 1 Noe, NW SW SW Sec. 34-10-10w.
T.D. 11,230 ft.; C.O. at 9,500 ft.

COAL COUNTY

Moore & Deaner's No. 1 Edward, NW NE SE Sec. 27-2-8.
T.D. 7,336 ft.; dry and abd.

J. D. Petty Oil Co.'s No. 1 McMillan, SW NW NE Sec. 16-1s-5.
Sandy shale at 1,000-34 ft.; S.D.

GRADY COUNTY

Carter Oil Co. and Magnolia Pet. Co.'s No. 1 Harrison C-34, C NW NW Sec. 28-3-5w.
Drlg. 8,271 ft.

GRANT COUNTY

Helmerich & Payne's No. 1 Crouse, C NE SW Sec. 29-25-3w.
Drlg. 2,626 ft.

HUGHES COUNTY

Dandridge & Crane's No. 1 Mead, NW NW NE Sec. 17-5-9.
Drlg. 250 ft.

Evans & Morris' No. 1 Day, NW NW SW Sec. 30-6-10; (700-ft. test).
Dry and abd. 650 ft.

Freeman et al's No. 1 Kite, NW NW NE Sec. 8-6-10.
S.D. 154 ft.

Meyers et al's No. 1 Scott, NE SE NW Sec. 23-6-8; (1,000-ft. test).
Sand 585-600 ft.; H.F.W.

Turner et al's No. 1 Williams, SW cor. Sec. 35-7-10.
Rig.

KAY COUNTY

Harris & Haun's No. 1 Schuessler, C NW SW Sec. 3-28-2.
Drlg. 150 ft.

Bay Oil Co.'s No. 1 Holden, SW SW SE Sec. 14-28-3.
Sand 2,960-93 ft.; flowed 165 bbls. in 24 hrs.; T.D. 3,042 ft.; running 5-in. csg.

Carter Oil Co.'s No. 1 Fowler, C NE Sec. 12-27-1e.
Set 10-in. csg. 2,180 ft.; drlg. 2,800 ft.

Lancer Oil Corp.'s No. 1 Hugo, SE NW NW Sec. 22-28-5.
Location.

S. R. McCorkle et al's No. 1 Smith, SW cor. Sec. 6-26-4.
Moving in material.

KINGFISHER COUNTY

Black Gold Oil Co.'s No. 1 Cole, C SW NE Sec. 24-18-5w.
Rigging up rotary.

LINCOLN COUNTY

Tom Bennett et a's No. 1 Bolby, C SE SW Sec. 27-12-2.
Cored 5,065-81 ft.; S.D. for csg.

R. L. Kemp and Comail Oil Co.'s N.o 1 Dooley, NE SW Sec. 26-17-6.
Dry and abd. 2,968 ft.

Derrickson and Reserve Pet. Co.'s No. 1 Law, SE SW NE Sec. 25-14-3.
Rig on ground.

Chester L. Carlock's No. 1 Young, C N½ NW NW Sec. 23-15-5.
Rig.

Sinclair Prairie Oil Co.'s No. 1 Hoyt, NW SW NE Sec. 5-14-3.
Wilcox sand 5,061-82 ft.; swbd. 87 bbls. of oil, 27 bbls. of wtr. in 24 hrs.

Sinclair Prairie Oil Co.'s No. 1 Boland, SW cor. Sec. 25-12-3.
Second Wilcox 5,536-61 ft.; H.F.W.

LOGAN COUNTY

Gypsy Oil Co. and Sinclair Prairie O. & G. Co.'s No. 1 Manning, C NW NW Sec. 3-17-4w.
Layton sand 4,863-97 ft.; 18,500,000 ft. of gas; comp.

Helmerich-Payne et al's No. 1 Sturgis, SE NW.
Drlg. 3,710 ft.

Shell Pet. Corp. et al's No. 1 Hirzel, SE SW SW Sec. 7-16-2w.
Set pipe 286 ft.

Sinclair Prairie Oil Co. et al's No. 1 Dunbar, Sec. 25-15-4w.
Set 9-in. csg. 5,508 ft.; T.D. 5,515 ft.

Sinclair Prairie Oil Co. et al's No. 1 School Land, SE cor. Sec. 36-17-1w.
Hunton 5,040 ft.; cored to 5,086 ft.

NOBLE COUNTY

Marathon Oil Co.'s No. 1 Gilbert, NE cor. Sec. 24-22-2.
Mississippi lime 3,997 ft.; drlg. 4,025 ft.

Sinclair Prairie Oil Co.'s No. 1 Cawood, C SW NW Sec. 27-20-2w.
Viola 4,970 ft.; set 7-in. csg. 4,930 ft.; T.D. 4,983 ft.; flowed 907 bbls. of 41 grav. oil in 24 hrs. by heads.

OKFUSKEE COUNTY

Amerada Pet. Corp.'s No. 1 Jaynes, NW NW SW Sec. 20-10-10.
Sand 640-60 ft.; show of gas.

Mid-Continent Pet. Corp.'s No. 1 Haney, SW SE NE Sec. 24-12-8.
Rig.

OKLAHOMA COUNTY

R. Carl Larkin's No. 1 Brobine, NW NW NE Sec. 23-13-5w.
Rig on ground.

J. C. Shaffer et al's No. 1 Bullard, SW cor. Sec. 13-13-2w; (Wilcox test).
Drlg. 4,395 ft.

Springrose Drlg. Co.'s No. 1 Edwards, C SE Sec. 19-11-1.
T.D. 6,540 ft.; P.B. to 5,500 ft.

OSAGE COUNTY

Peters Pet. Co. and Norbla Oil Co.'s No. 1, SW cor. Sec. 15-25-5.
H.F.W. 3,040 ft.

PAYNE COUNTY

Marathon Oil Co.'s No. 1 Potts, C SW SW Sec. 27-19-2.
Drlg. 80 ft.

Marathon Oil Co.'s No. 1 Potts, C SW SW Sec. 27-19-2.
Digging pits.

(Continued on Page 220)

SE SW Section 19-18-16, Wagoner County, was dry and abandoned at 1,560 feet.

Okmulgee and Muskogee Counties

B. L. Wigton's No. 2 Dyle, SW cor. Section 5-15-12, Okmulgee County, was abandoned. It had a hole full of water from Wilcox sand at 2,677-80 feet, total depth.

W. O. Allen's No .1 Robinson, NW SW NW Section 1-15-13, Okmulgee County, found Dutcher sand dry at 1,813-40 feet, and it was abandoned.

A. W. Cline's No. 1-A Perryman, CEL SE SE Section 19-15-14, Okmulgee County, was a 2-bbl. completion at 820-58 feet.

H. J. Metzger completed a 10-bbl. well in No. 2 M. Daniel, a twin, SW SE SW Section 8-15-17, Muskogee County.

Campbell and others abandoned No. 1 Flint, SW NE NE Section 27-14-13. It had salt water at 2,684-2,730 feet, total depth.

J. M. Foltz's No. 1 McIntosh, NE NE SE Section 17-14-17, Muskogee County, deepened from 1,350 feet to Wilcox sand at 1,912-14 feet, got a 30-bbl. well, which was completed.

J. A. Jones' No. 1 Townlot, NE NW NE Section 34-15-18, Muskogee County, is a 50-bbl. completion in sand at 979-89 feet.

J. A. Evans was drilling at 400 feet in No. 1 Garrett, SW SE NW Section 28-15-18, Muskogee County, was drilling at 400 feet. Boyle & Son's No. 4-A Russell, 660 feet west and 1,200 feet north of SE cor. Section 19-15-16, Muskogee County, was at a total depth of 1,195 feet, with 8-inch casing set at 801 feet.

Lincoln County

R. L. Kemp and Comail Oil Co.'s No. 1 Dooley, NE NE SE Section 20-7-6, Lincoln County, found Layton sand at 2,000-32 feet and Peru sand at 2,910-63 feet, both barren, and it was abandoned.

In the West Chandler Pool, Sinclair Prairie Oil Co.'s No. 3 Hopkins, SW SW NE Section 12-14-3, had Wilcox sand at 5,061-82 feet. It was shot with 10 quarts. The casing had to be swaged before the swab was run, and the well produced 125 bbls. of oil and 3 bbls. of water in 24 hours.

In the Chandler Pool, Slick-Urschel, Inc.'s No. 7 Kentzleman, NW NW SW Section 7-14-4, was abandoned as dry. Wilcox sand at 5,087-92 feet contained only salt water and Hunton lime, above 4,900 feet was shot without results.

The Cleveland sand yielded another good producer in the Texas Co.'s No. 1 Hoover, NE NE SE Section 33-14-4. Pipe was set at 3,015 feet and the sand penetrated at 3,050-57 feet. The well flowed 386 bbls. in 24 hours. It will be deepened.

Magnolia Petroleum Co.'s No. 5 Wagner, SW NE NE Section 18-4-4, was completed. It produced 780 bbls. in 24 hours on the swab from Wilcox sand at 4,994-5,003 feet.

Slick-Urschel, Inc., will deepen No. 3 Kentzleman, SE NE SW Section 7-14-4, from 5,026 feet to second Wilcox sand.

Mid-Continent Petroleum Corp. completed No. 1 Wagoner, NW SW NW Section 10-13-6, at a total depth of 4,200 feet and it flowed 500 bbls. of 22 gravity oil from Wilcox sand. Six-inch casing was set at 4,126 feet at the top of Viola lime. Oil appeared at 4,150 feet, and 125 bbls. of oil was swabbed in a 24-hour test at 4,168 feet. Wilcox was topped at 4,208 feet and Green shale at 4,280 feet.

Okfuskee County

J. S. Wise and others' No. 1 Yahola, NE NW SE Section 9-12-11, Okfuskee County, pumped 25 bbls. of oil and water from sand at 2,126-34 feet, and was plugged back to 2,245 feet for a test.

Prince & Anderson's No. 2 Grayson, NW SW SE Section 3-11-11, was dry and abandoned at 2,046 feet.

Havel, Keaton & Gold's No. 2 Likowski, SW NW NE Section 26-11-11, is a 20-bbl. completion in Booch sand at 2,041-57 feet.

Mid-Continent Petroleum Corp. was rigging up standard tools on No. 1 Dindy-B, SE SW NE Section 31-11-11, to drill deeper.

Wells Oil Co. was drilling at 476 feet in No. 6 Moore, C SW Section 14-10-11.

McIntosh County

Lindy Oil Co.'s No. 4 Gooden, NW SW SE Section 28-12-14, is a 350,000-foot gasser, completed in sand at 612-27 feet.

Oklahoma County

In the Edmond Pool, in Oklahoma County, Marathon Oil Co.'s No. 1 Dahl, SE cor. Section 31-14-3w, which has been in for some time but not completed, was given another test and flowed 531 bbls. in seven hours through choke. It was shut in, prorated.

Mid-Continent Petroleum Corp.'s No. 1 Young, SE SW NE Section 31-14-3w, had Wilcox sand at 6,530-34 feet, total depth, and in saturated sand the crew was preparing to core.

Marathon Oil Co.'s No. 1 Keefer, NW cor. Section 5-13-3w, a diagonal offset to No. 1 Dahl, mentioned above, tested 407 bbls. in 19 hours on choke, and was shut in for proration.

Gulf Production Co. of Oklahoma's No. 1 Lindsey, NE SW NW Section 6-13-3w, was drilling at 6,379 feet.

In the Oklahoma City Pool no completions were recorded. Wirt Franklin Petroleum Corp. and Sunray Oil Co. and others have a rig up for No. 1 County land, 380 feet from north and 580 feet from east line of NW Section 1-11-3w. White Rock Petroleum Co. was rebuilding rig to continue drilling No. 1 Betty Jane, SW NE SE Section 15-11-3w, present total depth 265 feet. Ray Stephens and others have made a location for No. 1 Billen, on Indian Territory Illuminating Oil Co. acreage, 194 feet north and 330 feet east of C Section 26-11-3w.

Greater Seminole Field

Phillips Petroleum Co.'s No. 1 Copeland, NW SE NE Section 5-10-4, Pottawatomie County, is a 297-bbl. completion producing from sand at 4,429-54 feet, which had been shot with 25 quarts.

Texas Co.'s No. 6 Mayhue (a twin), NE SE NE Section 14-9-6, Seminole Pool, Seminole County, was completed. It swabbed 125 bbls. after an acid treatment in Hunton lime at 3,978-4,026 feet.

Amerada Petroleum Corp.'s No. 1 J. Tiger, NW NE SW Section 2-8-5, plugged back from 4,140 feet to Hunton lime, tested 10 bbls. per day and was abandoned. Same company's No. 6 Tiger, NE NE SW Section 3-8-5, Seminole County, was plugged back from Wilcox to Hunton lime and acidized with no results and was abandoned.

Hodge Drilling Co.'s No. 1-A Hembree, NE NW SE Section 18-7-5, Pottawatomie County, flowed 295 bbls. in 24 hours from Hunton lime at 3,865-85 feet which had been acidized. It was completed.

Westgate Oil Co.'s No. 1-A Hembree, SE NW SE Section 18-7-5, Pottawatomie County, had Hunton lime at 3,847-3,911 feet and acidized it, adding a load of 200 bbls. of oil. It flowed 870 bbls. in 24 hours and later swabbed 523 bbls. in the following 24 hours.

Stanolind Oil & Gas Co.'s No. 1 Myers, C SE NW NE Section 31-7-8, in the Fish Pool, Seminole County, found Wilcox sand at 4,327-41 feet and swabbed and flowed 772 bbls. through tubing in five hours, or at the rate of 3,700 bbls. per day.

Hilton Phillips had 2,000 feet of oil in the hole in No. 3 Brister, NW SE SE Section 21-7-4, Pottawatomie County, from Viola lime at 4,059-77 feet.

Magnolia Petroleum Co.'s No. 4 Reed, SW SE SE Section 30-7-8, in the Fish Pool, Hughes County, was flowing 400 bbls. per day from Cromwell sand at 3,111-22 feet.

Evans & Morris' No. 1 Day, NW NW SW Section 30-6-10, Hughes County, a wildcat, was abandoned at 650 feet, after getting a hole full of water from Allen sand at 605-32 feet.

New work included Magnolia Petroleum Co.'s No. 1 Sharp, NE NE SW Section 6-6-5, Pottawatomie County, rigging up rotary; Superior Oil Corp.'s No.

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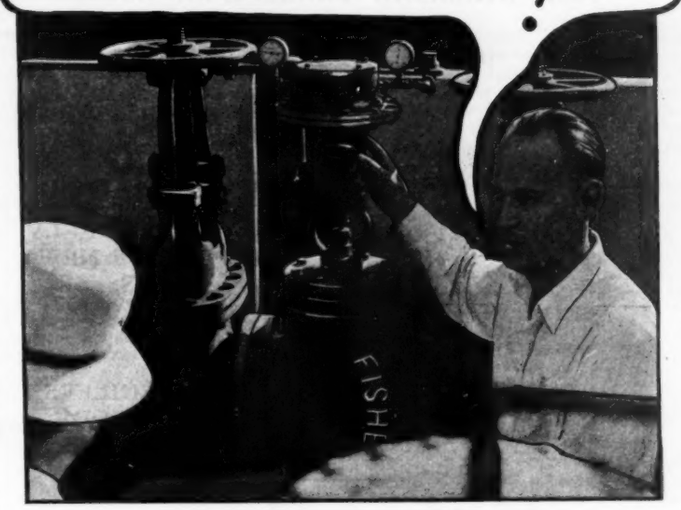
THAT FISHER WIZARD CONTROLLER IS ALL THEY CLAIM FOR IT!



. . . SAYS MR. BILL WILLIAMS

Assistant Superintendent at the O. C. Fields Gasoline Company plant, Huntington Beach, California. The picture above shows Mr. Arthur Hendrickson, Superintendent and his Assistant Bill Williams pointing to a WIZARD Controller holding 38 lbs. back pressure at the O. C. Fields Gasoline Company plant.

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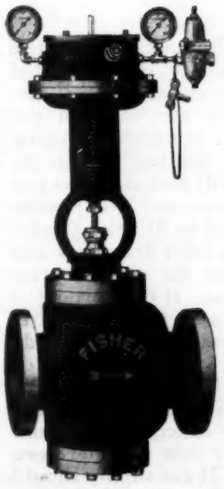

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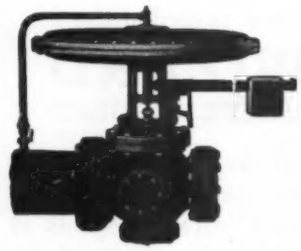

FULTON Low-Pressure Regulator

THE Fulton Low-Pressure Regulator can be fitted with new valve seats if desired, with the body of the regulator remaining undisturbed in the line. Plain directions will be mailed to any user on request. This regulator is capable of taking relatively high inlet pressures and reducing to the correct pressure for use. If the purpose is to deliver a very low pressure, the diaphragm surface is made very large so that the regulator becomes highly sensitive to any variation at the outlet and adjusts itself to compensate. Action is exact, positive and sure. Changes of pressure on the inlet side are therefore without effect on the delivered pressure. If gas supply should fail, automatic cut-off is provided. This Regulator is easy to install, never sticks, gives unfailing satisfaction. One of a line of regulators for all needs of gas control which has been known and approved for forty years. Catalog and other printed matter mailed on request.

The Chaplin-Fulton Manufacturing Co.

28-40 Penn Avenue Pittsburgh, Pa.

2 Ham, NW NE NE Section 5-6-4, Pottawatomie County, rigging up rotary; Sinclair Prairie Oil Co.'s No. 2 Hembree, NW NE SE Section 18-7-5, rig on the ground, and Westgate Oil Co.'s No. 1 Bullard, NE SW SE Section 18-7-5, Pottawatomie County, moving in rig; Magnolia Petroleum Co.'s No. 1 Crane, SW SE NW Section 12-7-4, Pottawatomie County, location; Vivian Oil Co.'s No. 1 King, SW SE NW Section 29-8-4, rig.

Pontotoc County

Petroleum Shoreline Oil Co.'s No. 1 Walters, SE cor. Section 8-4-8, Pontotoc County, an Allen sand test, was dry and abandoned at 750 feet. It found no sand.

In the Fitts Pool, E. H. Moore and others completed No. 1 Akers, NE NW NE Section 36-2-6. It flowed 810 bbls. of oil in one hour. Bromide was topped at 4,155 feet and sands, sandy lime and lime were found down to the bottom at 4,394 feet. Core was taken at 4,380-94 feet.

Schermerhorn Oil Co.'s No. 1 Banks, SW SE SE Section 16-2-7, was abandoned at 2,024 feet. It had a dry sand at 1,755-95 feet.

Dixie Oil Co. had a showing of oil at 905-20 feet in its wildcat test, No. 1 Graham, C SW SE SW Section 13-1-7, and was drilling at 1,093 feet.

Moore and others had rig on the ground for No. 3 Smith-B, NW NE NE Section 36-2-6; a rig up for No. 2 Smith-B, SE cor Section 25-2-6, and rig up for No. 1 Smith-B, SW SE SE Section 25-2-6 (corrected location).

In Southern Counties

In Jackson County, the Gypsy Oil Co.'s No. 1-B Kelly, NE cor. Section 10-1n-20w, which has sand at 1,405-24 feet, was opened and flowed 20 bbls. of oil in 20 minutes. Later it swabbed 133 bbls. of 43.8 gravity oil in 24 hours with no water. Same company's No. 1-A Kelly, also in NE cor. Section 10, is being used as a gas well, the gas coming from sand at 1,102-19 feet. It had been drilled to 1,700 feet and plugged back to 1,424 feet.

Gypsy Oil Co.'s No. 1 Stokes, SE NW SW Section 11-1n-20w, was plugged back from 1,723 feet to 1,668 feet and shot with perforating gun from 1,663-1,533 feet and had 100 feet of muddy water in the hole with a rainbow showing of oil. The crew was preparing to bail and test.

William Angle's No. 1 Johnston, NE NE SE Section 17-1n-8w, Stephens County, showed 7,000,000 feet of gas and was spraying some oil and water through 2-inch tubing. It had been drilled to 2,473 feet and was producing from sandy lime at 2,374-2,415 feet.

G. L. Priest's No. 1 Cope-Sublett, NW SE NE Section 1-8s-5e, Marshall Coun-

(Continued on Page 226)

Wildcat Operations in Oklahoma

(Continued from Page 218)

PITTSBURG COUNTY

McAllister Pet. Corp. et al's No. 1 Chunn, C SE NW Sec. 29-4-14.
T.D. 3,015 ft.; cmtd. off cave at 1,500 ft.

P. H. Gray et al's No. 1 Lee, NW SE Sec. 12-5-12.
Drlg. 615 ft.

PONTOTOC COUNTY

E. M. Blanchard's No. 1 Crabtree, NE SE NE Sec. 27-3-6.
S.D. 2,920 ft.

Dandridge et al's No. 1 Stafford, NW cor. Sec. 5-1-6e.
T.D. 680 ft.; S.D.

Dixie Oil Co., Inc.'s No. 1 Graham, SW SE SW Sec. 13-1-7.
Drlg. 150 ft.

Gillett & Kroeger's No. 1 Robbins, NE SE Sec. 31-1-4.
Rig on ground.

Gillette & Kroeger's No. 1 Duver, NW SE Sec. 36-1n-6e.
T.D. 784 ft.; S.D.

H. M. Marcum's No. 1 Magnuson, SW SE SE Sec. 23-2-7.
Set 12-in. csg. 425 ft.; testing.

J. D. Sledge and Jack Lynch's No. 1-A (twin) Thompson, SW NE SW Sec. 1-1n-7e.
2,000 gals. acid; flowed 84 bbls. net oil in 24 hrs.

Southern Oil Corp.'s No. 1 Ladd, C NW NW Sec. 27-3-7.
Sylvan 1,770 ft.; drlg. 1,775 ft.

POTTAWATOMIE COUNTY

Blackgold Pet. Co.'s No. 1 Bizzell, C NE NW Sec. 15-7-3.
Hunton 4,430 ft.; T.D. 4,432 ft.; flowed 70 bbls. oil in 3 heads.

SEMINOLE COUNTY

Atlantic Oil Prod. Co. et al's No. 1-A Thompson (community test), SW SE SE Sec. 15-11-8.
Spudded.

Ray Dorris and J. T. Hall's No. 1 Dorris, SE SE SW Sec. 31-10-7.
Spudded.

Harris and Haun's No. 1 Harjo, NE SE NW Sec. 11-6-6; (O.W.P.B.).
P.B. to 2,115 ft.; F.F.W.; S.D.

Gypsy Oil Co.'s No. 1 Grayson, SW NW Sec. 13-6-5.
Mayes 3,280 ft.; drlg. 3,340 ft.

Verser & Clay et al's No. 1 Thomas, NE SE NW Sec. 1-6-6.
T.D. 2,422 ft.; S.D.

Wofford Drlg. Co. et al's No. 1 Abbott, NE cor. Sec. 33-8-7.
Rig.

Wofford Drlg. Co. et al's No. 1 Thomas, NW SE Sec. 8-6-7.
Rig on ground.

TEXAS COUNTY (PANHANDLE)

Ben F. Ash et al's No. 1 Guymon Townsite, C NE SE Sec. 30-3n-15e; (Cimarron Meridian).
T.D. 2,420 ft.; fishing for drill pipe.

WASHITA COUNTY

Okla.-Midwestern Oil Co.'s No. 1 Dock, SW cor. Sec. 21-8-18w.
T.D. 2,430 ft.; lost tools in hole; rig rebuilt; S.D.

Anadarko Basin Oil Co.'s No. 1 Wolf, NE SW Sec. 23-9-17w.
Rigged up and S.D.

SOUTHERN OKLAHOMA

ATOKA COUNTY

Brookshire et al's No. 1 Rowland, NW NE NE Sec. 15-3-10.
H.F.W. 3,844 ft.; will abd.

Malernee et al's No. 1 D. O. K. Land Co., C SE SE Sec. 16-2s-13.
S.D. 3,115 ft.

BRYAN COUNTY

Hankin & Williams' No. 1 Slagg, SE SW SE Sec. 20-6s-13e.
T.D. 503 ft.; S.D.

C. B. Welch's No. 1 Collins, SW cor. NE NE SE Sec. 19-8s-8e.
Machine.

CARTER COUNTY

Daphfine Oil Co.'s No. 1 Hooks, SE NW NW SE Sec. 5-1s-2w.
T.D. 3,281 ft.; will test sand 1,075-1,185 ft.

CHOCTAW COUNTY

J. V. Scrivener et al's No. 1 Swink, C NE SE Sec. 29-6s-20e.
S.D. 310 ft.

COMANCHE COUNTY

F. F. Stevens' No. 1 Green, SE SW Sec. 2-1-13w.
T.D. 1,210 ft.; fishing.

Heiden & Taylor's No. 2 Crutcher, C NE Sec. 11-1n-12w.
T.D. 362 ft.

JACKSON COUNTY

Burk Royalty Co.'s No. 1 Gore, SE NW SE Sec. 3-1s-20w.
Drlg. 1,909 ft.

Gypsy Oil Co.'s No. 1 Stokes, SE NW SW Sec. 11-1-20w.
Lime 1,709-11 ft.; T.D. 1,722 ft.; S.D.

Gypsy Oil Co.'s No. 1-A (twin) Kelly, NE cor. Sec. 10-1n-20w.
P.B. to 1,424 ft. and S.D.

Gypsy Oil Co.'s No. 1-B Kelly (twin), 330 ft. S and 280 ft. W, SE cor. Sec. 10-1n-20w.
Oil sand 1,412-24 ft.; swbd. 68 bbls. of 43 grav. oil in 12 hrs.; S.D. for tankage.

Ben Russell et al's No. 1 Unknown, NW SE Sec. 30-1-22w.
Dry and abd. 6,012 ft.

JEFFERSON COUNTY

Geo. Pace et al's No. 1 Jack, NE NW NW Sec. 10-4s-4w.
T.D. 3,031 ft.; reaming hole.

H. F. Young et al's No. 1 Boulden, SE SW SW Sec. 1-7-4w.
Dry and abd. 2,700 ft.

JOHNSTON COUNTY

W. A. Delaney et al's No. 1 Diamond, NW NE SE Sec. 5-1s-8.
Rigging up.

MARSHALL COUNTY

Paul Robb's No. 1 Vittetoe, C NE SE Sec. 11-5s-4e.
T.D. 4,943 ft.; recovered core barrel; S.D.

McCURTAIN COUNTY

J. V. Schrivener et al's No. 1, NE SW SW Sec. 34-6s-21.
Machine.

MURRAY COUNTY

Equitable O. & G. Co.'s No. 1 Scott, CSL N½ NW SW Sec. 15-1s-3.
Rigging up machine.

Manahan et al's No. 1 Ward, NE SE NW Sec. 18-1s-3; (Wilcox sand test).
Rigging up standard tools.

T. E. Revell et al's No. 1 Wolfe, NE cor. Sec. 18-1-2.
Sand 2,658-70 ft.; show of oil; T.D. 3,710 ft.; U.R. 5-in. csg. at 2,565 ft.

C. P. Williams et al's No. 1 Singleterry, SE SW NW Sec. 25-2s-3e.
T.D. 743 ft.; S.D.

STEPHENS COUNTY

Wm. Angle's No. 1 Johnson, NE cor. SE Sec. 17-1n-8w.
T.D. 2,473 ft.; 7,000,000 ft. gas; spraying little oil and wtr.

Dixie Oil Co., Inc.'s No. 1 Graham, SW SE SW Sec. 13-1n-7w.
Rig.

J. W. Madison's No. 1 Tussey, SW SE NW Sec. 24-1n-4w.
Rig down, drill pipe in hole; T.D. 3,220 ft.

California's Sales Agency Seeks Price Increase; Marketing Companies Divided on Proposal

By L. P. STOCKMAN
Staff Correspondent, California Fields

LOS ANGELES, Calif., Dec. 24.—The Oil Producers Sales Agency of California has started a movement to secure an increase in the price of crude and there appears justification as long as the marketing situation remains stabilized. Some marketing companies are of opinion no change should be made at this time, that conditions during 1935 will be substantially improved if existing schedules can be maintained. They believe the situation will take care of itself and an increase in the allowable would prove more advantageous. Many marketers feel inclined to sit tight until they ascertain whether there is any possibility of continuing fuel oil shipments to the Atlantic Coast because if this business goes by the boards they may find it necessary to accumulate stocks of fuel oil rather than dump it at distress prices.

The Sales Agency wired all California buyers several days ago requesting an increase of 25 cents per barrel on 27 gravity Signal Hill crude and a corresponding adjustment on other grades. Directors of the agency contend the major curtailment burden has fallen upon the small producer and that major companies, though also curtailing, have improved their cash position by withdrawing past accumulations from storage. They are also of opinion independent producers, due to increased costs and severe curtailment, have not been able to maintain their status or improve their positions.

Increased Allowable

Because orders and regulations of the petroleum administrator stipulate no new fields shall be given an allotment in excess of the decline registered by existing fields, operators in the Santa Barbara Mesa and Mountain View Fields have petitioned the Central Committee of California Oil Producers to send a delegation to Washington to request a revision in existing curtailment orders. The Code and Allocation Committee, W. H. Geis, chairman, recommended to the Central Committee such action be taken as its members felt the fields could not be given an increased allowable under present orders and special consideration is justified. The Central Committee has tentatively approved the proposal.

Santa Barbara Mesa has an accredited daily potential of 12,040 bbls. and an allowable of 1,789 bbls. Mountain View's potential is around 55,000 bbls. and the allowable 5,655 bbls. At a hearing held by the Central Committee, a committee representing Santa Barbara Mesa operators informed the curtailment committee that "Richfield Oil Co. and Rio Grande Oil Co., purchasing a large part of the field's production, say they have a demand for this type of oil to be used in blending stock for fuel oil along with other fuel oil to the extent of 100,000 bbls. monthly if they are allowed to buy it. We may have to go to Washington with this demand, but we have an emergency condition and ask to be allowed to produce in excess of the present allowables and have them charged up to us at a later date."

The allowable daily production of California which was increased 17,000 bbls. per day for the period from December 15 to January 31 does not contemplate any increase in the allotment of the two fields.

Tanker Movements

An increased allowable for the Santa Barbara Mesa Field predicated on the basis that since fuel oil stocks have been substantially reduced during the past year the state should be granted a higher allowable. But no one is sure what the domestic demand will be for fuel oil during 1935. Liftings of fuel oil for the East Coast last week were considerably lower than previous averages. Most of the tankers now en route up the West Coast are white boats and of the few dirty bottoms it is probable most of them will lift gas oil, Diesel oil, furnace oil or stove oil.

During the first 11 months of last year, California companies moved 4,121,546 bbls. of fuel oil to the Atlantic Seaboard for domestic consumption and this increased to 11,915,857 bbls. during the corresponding period in 1934. Gasoline shipments have shown a substantial decline. Eastern marketers find it necessary to purchase fuel oil in California at approximately 65 cents per barrel to lay it down along the Atlantic Coast at about $1.20 per barrel. Many feel the market will not stand a price in excess of $1.20 per barrel.

Exports

Export shipments of fuel oil, principally to Japan, have shown a substantial increase. It is expected shipments to Japan will be heavy during the next few months because of the new law which provides that marketers must maintain a reserve stock equal to 50 per cent of their annual sales. This added compulsory storage will be made up of crude oil, fuel oil, Diesel oil and gasoline.

A considerable amount of Kettleman crude oil has been moved to Japan during 1934 but the quantity to be lifted during 1935 depends upon the ability of buyers to meet anticipated higher prices. Associated Oil Co., which holds a stock interest with Mitsubishi Oil Co. in the operation of a refinery in Japan, will in all probability continue shipments of crude to this plant but California marketers who have been making spot sales or quantities specified in contracts will probably begin to demand higher prices. The Japanese market demands Kettleman Hills crude oil, to the practical exclusion of all other grades, because this oil yields a much larger quantity of gasoline.

Some of Japan's crude requirements during 1935 will come from Bahrein Island, in the Persian Gulf. Standard Oil Co. of California's tanker W. S. Rheem is already en route to Bahrein and is scheduled to make one or two trips to Japan. It is likely she will bring back a cargo of crude to California. Present plans call for the initiation of regular service between Bahrein Island and Japan early in 1935.

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	December 9		December 2			
Intercoastal-domestic—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	.....	80,650
Fuel oil	.....	.....	129,967	18,567	11,805,207	4,489,246
Diesel and gas oil	79,146	11,307	78,381	11,197	1,507,410	1,302,411
Gasoline	74,124	10,589	297,607	42,515	7,758,330	10,298,035
Kerosene	.....	.....	198,060	28,437	1,175,639	906,294
Asphalt	.....	.....	.....	.....	70,019	12,179
Other finished oil	.....	.....	.....	.....	54,778	90,567
Other unfinished oil	.....	.....	.....	.....	.....	72,584
Foreign exports—						
Crude oil	156,836	22,405	291,034	41,576	7,848,924	7,373,674
Fuel oil	391,958	55,994	390,416	55,631	12,761,600	7,540,541
Diesel and gas oil	155,747	22,250	147,660	21,094	3,980,597	3,291,355
Gasoline	89,683	12,812	215,203	30,743	4,623,603	5,273,819
Kerosene	97,677	13,954	56,051	8,007	1,743,246	1,828,622
Other finished oil	.....	.....	.....	.....	37,955	12,086
Other unfinished oil	.....	.....	75,383	10,769	230,745	66,375
Coastwise-domestic—						
Crude oil	75,101	10,729	65,406	9,344	7,503,477	6,170,379
Fuel oil	273,969	39,138	124,427	17,775	9,134,026	10,004,315
Diesel and gas oil	21,097	3,014	221,114	31,588	715,015	968,963
Gasoline	255,015	36,431	153,063	21,866	13,275,559	11,874,977
Kerosene	4,504	643	6,960	994	303,277	196,756
Naphtha distillates	.....	.....	.....	.....	.....	27,651

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic—						
Fuel oil	.....	.....	.....	.....	110,650	.....
Diesel and gas oil	.....	.....	.....	.....	675,775	619,539
Gasoline	.....	.....	70,660	10,094	435,943	804,548
Kerosene	.....	.....	.....	.....	276,593	482,430
Lubricants	.....	.....	.....	.....	52,112	41,339
Foreign exports—						
Crude oil	78,760	11,251	.....	.....	1,857,361	1,696,661
Fuel oil	59,845	8,549	20,998	2,998	2,124,592	1,873,671
Diesel and gas oil	.....	.....	.....	.....	1,174,982	968,783
Gasoline	9,101	1,300	22,559	3,223	2,732,842	3,832,846
Kerosene	.....	.....	36,546	5,221	1,044,769	1,066,367
Lubricants	3,020	431	.....	.....	170,760	134,591
Other finished oil	.....	.....	.....	.....	3,760	3,745
Other unfinished oil	.....	.....	.....	.....	5,750	26,278
Coastwise-domestic—						
Fuel oil	173,609	24,801	32,960	4,709	5,119,277	3,737,768
Diesel and gas oil	.....	.....	.....	.....	119,036	349,663
Gasoline	14,380	2,054	143,133	20,448	5,323,269	4,262,987
Kerosene	.....	.....	.....	.....	82,434	114,138

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.	T.	R.	Depth	Status—
Speik, F. A., No. 1 Athens, Los Angeles Co.	2-	3-14		....	rigged up
Houser, G. W., No. 1 Athens, Los Angeles Co.	18-	3-14		4,037	cleaning out
Macrate, A. N., No. 1 Athens, Los Angeles Co.	18-	3-14		4,874	sd. sh. drlg.
Wilshire Oil Co., No. 2 Potrero Deep, Los Angeles Co.	27-	2-14		7,995	recmtd. 6,875
Madison Oil Co., No. 1 Del Rey, Los Angeles Co.	27-	2-15		....	rigging up
Mammoth Oil Co., No. 1 Del Rey, Los Angeles Co.	27-	2-15		....	material
Fourl, C. W., No. 2 Del Rey, Los Angeles Co.	27-	2-15		....	bldg. rig
Union Oil Co., No. 6 Del Rey, Los Angeles Co.	27-	2-15		3,760	sd. sh. drlg.
Big Ben Oil Co., No. 1 Del Rey, Los Angeles Co.	27-	2-15		3,582	sd. sh. drlg.
Staple Oil Co., No. 1 Manhattan, Los Angeles Co.	24-	3-15		5,797	sd. sh. drlg.
Marble, Willard, No. 1 Chatsworth, Los Angeles Co.	6-	2-16		1,985	cleaning out
Partridge & Chambers, No. 1 Whittier, Los Angeles Co.	22-	2-11		....	location
Standard Oil Co., No. 1 Montebello Deep, Los Angeles Co.	6-	2-11		8,321	plug 3,500
Universal Consd. No. 4 Montebello Deep, Los Angeles Co.	6-	2-11		2,292	sd. sh. drlg.
Shively, N. O., No. 1 Puente Hills, Los Angeles Co.	23-	2-10		2,395	sd. sh. drlg.
Pressel & Tull, No. 1 Puente Hills, Los Angeles Co.	30-	2-	9	4,131	br. sh. drlg.
International Dev. Co., No. 1 Saugus, Los Angeles Co.	34-	5-16		3,531	hd. sh. drlg.
Barstow Oil Co., No. 1 Castaic, Los Angeles Co.	35-	5-16		3,161	sd. sh. drlg.
Black Eagle Oil Co., No. 1 Huntington, Orange Co.	tideland			4,702	cmtd. 4,273
Explorers Drilling Co., No. 1 Fairview, Orange Co.	9-	6-10		945	suspended
Nuoil Co., No. 1 Newport, Orange Co.	29-	6-10		6,485	prod. test
B. & B. Oil Co., No. 1 Newport, Orange Co.	19-	6-10		3,001	sd. sh. drlg.
Great American Pet. Co., No. 2 East Coyote, Orange Co.	19-	3-	9	3,151	sd. sh. drlg.
Great American Pet. Co., No. 1 Chino, San Bernardino Co.	18-	2-	8	2,462	suspended
Great American Pet. Co., No. 3 Chino, San Bernardino Co.	7-	2-	8	313	suspended
Tehama Pet., No. 1 Santa Ana Canyon, San Bernardino Co.	33-	2-	8	2,698	run wtr. witch
San Diego Pet. Co., No. 1 Chula Vista, San Diego Co.	32-18-		2	6,333	will set pipe
Edmonds, E. A., No. 1 Trustee, San Diego Co.	29-18-		3	2,431	hd. sd. drlg.
Great Coastal Oil Co., No. 1 Elsinore, Riverside Co.	36-	5-	5	490	hd. sd. drlg.

Completions Less

Completions in California were less numerous this week and the aggregate production of new wells was substantially lower. The delay being experienced by operators holding town lots in the eastern end of the Playa Del Rey Field will have a tendency to retard drilling operations until early next year and this field may continue rather active through the early part of summer.

Union Oil Co., which holds a lease on the Vidor property, is making splendid progress on its No. 6, an offset to C. W. Fourl's recent completion as the bit is already below 4,000 feet. Union's Vidor lease extends to the base of the Del Rey Palisades which rise almost perpendicularly 150 feet so the base of Fourl's new well is a little higher than the top of Union's new derrick. Union's No. 6 Vidor should be completed about January 10.

Mammoth Oil Co. has been experiencing difficulty in making grade for its first well in this section.

Kettleman Hills

In five cases involving leases in the Kettleman North Dome Field held by Milham Exploration Co., Continental Oil Co., Kettleman North Dome Association, Marland Oil Co., Carl H. Beal, A. W. Elliott and Kettleman Oil Explorations, Ltd., the Superior Court sustained the defendants' demurrer.

Standard and Kettleman North Dome Association should list new wells in the North Dome early in the year and it is probable Union, Petroleum Securities and Associated will also add at least one new completion each. Union is still held up with mechanical trouble in No. 1 Lillis-Welsh. Kenda has plugged back No. 56-8-Q from 10,154 feet to 9,220 feet preparatory to redrilling the hole which has deviated from the vertical.

Huntington Beach

Standard Oil Co. had a wild well in the Huntington Beach Field a few days ago when No. 66-B blew in without warning and sprayed the landscape and forced the motor patrol to re-route traffic off the Coast Highway. In the Dominguez Field, Shell's No. 60 Reyes, completed at 4,904 feet and finished with a 5¾-inch liner carrying 66 feet of perforated, was brought in flowing 1,076 bbls. of 28.1 gravity and 462,000 feet of gas. It showed a cut of about 31 per cent. Union's No. 36 Callender was brought in flowing 590 bbls. of 32.5 gravity oil cutting 2 per cent from 5,752 feet after the hole had been finished with a 4¾-inch liner carrying 478 feet of perforated.

General Petroleum Corp., in the Brea Olinda Field, is progressively developing the Tonner lease. It is putting the fin-

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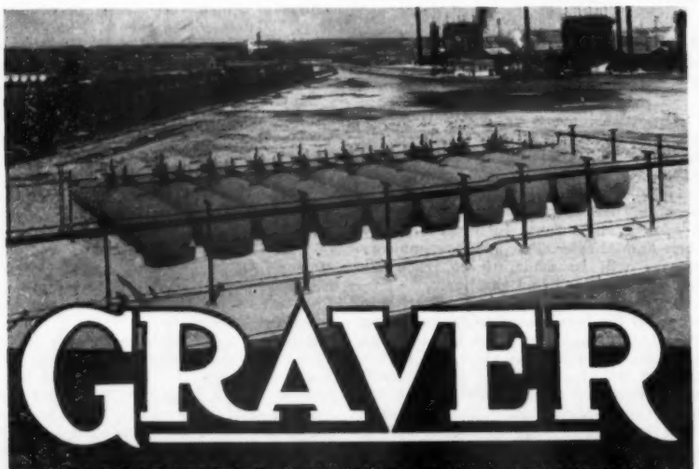

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ishing touches on No. 15 Tonner and has foundation going in for No. 16. The Standard Oil Co. should have another well ready for completion in the West Coyote Field within 30 days which should be followed by No. 120 Murphy-Coyote. In the Inglewood Field, Associated Oil Co. is deepening No. 50 Vickers to the Rindge Zone.

Long Beach

Commercial Oil Co.'s No. 1 Signal was completed on a compressor doing 435 bbls. of relatively clean 26.7 gravity oil per day from 5,630 feet after the hole had been finished with a 6⅝-inch liner including 460 feet of perforated. J. H. Cochran's No. 9 Long Beach, bottomed at 4,210 feet and finished with a 3-inch perforated liner, was brought in pumping 196 bbls. of 26.5 gravity oil cutting 20 per cent. It may clean up a litfle.

Montebello

The Montebello Field of Los Angeles Basin has passed out of the picture, at least temporarily or until some operator discovers the prospective deep zone. The deep Cruz zone has proved to be one of those ghost sands operators are always pursuing but rarely find. Universal Consolidated Oil Co.'s first deep well proved good for approximately 1,000 bbls. per day. Based on development work, this deep zone can extend in only to the east. Universal Consolidated decided to test out this possibility and started a new well now down about 3,000 feet. If this zone is east of production, Texas Co. holds several leases in the extreme eastern end. The logs of wells in the east end fail to show any conformity or uniformity.

Wilshire Oil Co. has been experiencing a lot of trouble with its deep test in the Potrero Field due to water trouble and after recementing 8⅝-inch at 6,620 feet about five times has decided to run in a string of 6⅝-inch and cement through perforations at 6,875 feet. A water survey test indicated water was entering the hole below the shoe of the original 8⅝-inch water string and the company was therefore obliged to land another string of pipe. This well showed a lot of kick a few months ago and looked like it might break loose during drilling. The crew has

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S. T. R.	Depth	Status—
General Pet. Co., No. 11 Capitan, Santa Barbara Co.	32- 5-30	2,600	679 b. d.
General Pet. Co., No. 12 Capitan, Santa Barbara Co.	32- 5-30	511	sd. sh. drlg.
Shell Oil Co., No. 2 Capitan, Santa Barbara Co.	32- 5-30	3,199	recmtd.
Snell Oil Co., No. 3 Capitan, Santa Barbara Co.	5- 4-30	1,761	hd. sh. drlg.
Royalty Serv. Corp., No. 1 Los Alamos, Santa Barbara Co.	35- 9-32	4,500	suspended
Union Oil Co., No. 3 Santa Maria, Santa Barbara Co.	35-10-34	3,472	well P.B.
York-Smullin, No. 2 Lompoc, Santa Barbara Co.	33- 8-34	....	rigging up
Barnsdall-Rio Grande, No. 8 Doty Elwood, Santa Barbara	15- 4-29	5,732	redrlg. 3,395
Barnsdall-Rio Grande, No. 10-88 Elwood, Santa Barbara	tideland	....	bldg. foundtn.
East Elwood Pet. Co., No. 1 Elwood, Santa Barbara Co.	14- 4-29	3,677	suspended
Shell Oil Co., No. 1 Goleta, Santa Barbara Co.	20- 4-28	5,576	rd. sd. drlg.
Standard Oil Co., No. 2 Goleta, Santa Barbara Co.	17- 4-28	4,850	redrlg. 4,779
Ortega Oil Co., No. 1 Summerland, Santa Barbara Co.	16- 4-26	4,583	P.B. 4,146
Woodrow Pet. No. 1 Rincon, Ventura Co.	4- 3-24	7,612	suspended
General Pet. Co., No. 4 Rincon, Ventura Co.	tideland	....	bldg. pier
Continental, No. 3 San Miguelito, Ventura Co.	23- 3-24	7,015	test W.S.O.
Las Posas Pet. No. 1 Las Posas, Ventura Co.	22- 3-20	7,370	fishing
Fisher, Daniel, No. 1 South Mountain, Ventura Co.	5- 3-19	765	suspended
The Texas Co., No. 128 South Mountain, Ventura Co.	4- 3-19	5,430	fish. D.P.
Oil Ridge Oil Co., No. 1 Fillmore, Ventura Co.	1- 4-19	1,500	br. sh. drlg.
Bolsa Chica Oil Co., No. 2 Piru, Ventura Co.	4- 4-18	461	suspended
Piru Oil Co., No. 1 Piru, Ventura Co.	14- 4-18	3,545	dry, abd.
Dawson Oil Co., No. 1 Simi, Ventura Co.	5- 2-17	1,876	suspended
Rancho Oil, Inc., No. 1 Ojai, Ventura Co.	18- 4-23	2,525	suspended
Continental Oil Co., No. 1 Ojai, Ventura Co.	12- 4-23	1,250	rd. sh. drlg.
Prop. Service Corp., No. 1 Lloyd, Ventura Co.	24- 3-23	7,194	P.B. 7,110 idle
Mosher, J. W., No. 1 Santa Paul, Ventura Co.	22- 4-21	2,300	reaming
Standard Oil Co., No. 1 Lost Hills, Kern Co.	2-26-20	....	grading
Casa Mira Oil Co., No. 1 Belridge, Kern Co.	29-28-20	6,504	cleaning out
General Pet., No. 1 South Belridge, Kern Co.	30-28-21	11,377	suspended
Ohio Oil Co., No. 1 North Belridge, Kern Co.	36-27-20	8,525	r.u. to dpn.
Union Oil Co., No. 18 North Belridge, Kern Co.	36-27-20	8,523	redrlg. 8,380
Standard Oil Co., No. 1-A North Belridge, Kern Co.	36-27-20	5,531	sd. sh. drlg.
Amerada Pet., No. 1 Blackwells Corner, Kern Co.	17-26-19	4,282	br. sh. drlg.
Cimarron Oil Co., No. 1 Delano, Kern Co.	14-25-27	1,988	sd. sh. drlg.
Standard Oil Co., No. 1 Delano, Kern Co.	1-25-23	....	material
Trico Oil & Gas Co., No. 1 Alpaugh, Kern Co.	3-25-23	2,525	5,000 M.C.F.
Pell Oil Co., No. 1 McVan, Kern Co.	14-27-27	1,593	suspended
Buckeye Union Oil Co., No. 1 McVan, Kern Co.	11-27-27	1,169	rig to pump
Hancock Oil Co., No. 2 Mountain View, Kern Co.	14-30-28	5,298	sd. sh. drlg.
Associated Oil Co., No. 1 Mountain View, Kern Co.	3-31-29	4,873	sd. sh. drlg.
Associated Oil Co., No. 2 Mountain View, Kern Co.	14-30-28	5,286	dry, abd.
Star Pet. Corp., No. 1 Mountain View, Kern Co.	10-30-28	....	rigging up
Union Oil Co., No. 4 Mountain View, Kern Co.	15-30-28	5,525	W.S.O.N.G.
Union Oil Co., No. 5 Mountain View, Kern Co.	15-30-28	4,999	sd. sh. drlg.
Union Oil Co., No. 6 Mountain View, Kern Co.	9-30-28	198	sd. drlg.
General Petroleum, No. 3 Mountain View, Kern Co.	14-30-28	....	bldg. rig
The Texas Co., No. 4 Mountain View, Kern Co.	14-30-28	2,769	suspended
Barnsdall, No. 3 Mountain View, Kern Co.	31-30-29	6,286	sd. sh. drlg.
Hogan Pet., No. 6 Mountain View, Kern Co.	4-31-29	3,591	sd. sh. drlg.
Standard Oil Co., No. 4 Mountain View, Kern Co.	23-30-28	5,095	sd. sh. drlg.
Ohio Oil Co., No. 1 Mountain View, Kern Co.	33-30-29	606	sd. sh. drlg.
National Oil Co., No. 1 Mountain View, Kern Co.	30-30-29	5,604	redrlg. 4,092
Mountain View Oil Co., No. 1 Mountain View, Kern Co.	25-30-28	2,060	sd. sh. drlg.
Gilmore-Snyder Oil Co., No. 2 Mountain View, Kern Co.	24-30-28	3,695	sd. sh. drlg.
Glico, Inc., No. 2 Edison, Kern Co.	23-30-20	2,259	P.B. 1,915
Jergins Trust, No. 3 Edison, Kern Co.	14-30-29	1,568	prod. test
Jergins Trust, No. 4 Edison, Kern Co.	24-30-29	....	rig, suspended
Consd. Crude Oil Co., No. 1 Edison, Kern Co.	17-30-29	2,797	sd. sh. drlg.
Ohio Oil Co., No. 1 Edison, Kern Co.	36-30-29	....	bldg. rig
Shell Oil Co., No. 1 Edison, Kern Co.	16-30-29	4,276	suspended
Shell Oil Co., No. 2 Edison, Kern Co.	15-30-29	3,431	sd. sh. drlg.
Shell Oil Co., No. 3 Edison, Kern Co.	14-30-29	2,058	cmtd.
Monterey Expl. Co., No. 4 Edison, Kern Co.	15-30-29	3,281	sd. sh. drlg.
The Texas Co., No. 1 Edison, Kern Co.	4-30-29	3,100	sd. sh. drlg.
Mitchell-McMillan, No. 1 Edison, Kern Co.	8-30-29	316	sd. sh. drlg.
General Pet., No. 2 Edison, Kern Co.	15-30-29	2,408	sd. sh. drlg.
Surety Oil Co., No. 1 Edison, Kern Co.	32-29-29	....	rig, suspended
Signal Oil & Gas Co., No. 1 Edison, Kern Co.	31-29-30	535	P.B. 465
Caravel Pet., No. 1 Sivert, Kern Co.	19-30-30	1,925	suspended
Sea Cliff Oil Co., No. 1 Greenfield, Kern Co.	7-31-28	131	tech. spud
Tejon Ridge Oil Co., No. 1 Comanche, Kern Co.	23-32-29	1,582	sd. sh. drlg.
Standard Oil Co., No. 1 Semi-Tropic, Kern Co.	8-27-23	....	rig, suspended
101 Oil Co., No. 1 Elk Hills, Kern Co.	5-30-24	....	rig, suspended
Richfield Oil Co., No. 2 Devil's Den, Kern Co.*	14-25-18	411	sd. sh. drlg.
The Texas Co., No. 1 Temblor, Kern Co.	29-29-21	1,295	sd. sh. drlg.
Shell Oil Co., No. 1 Buena Vista, Kern Co.	9-32-25	....	rigging up
Reserve Oil & Gas Co., No. 1 Tejon, Kern Co.	2-10-19	....	bldg. rig
Badger Oil Co., No. 1 Tejon, Kern Co.	31-11-19	6,248	cleaning out
Russ Oil Synd., No. 1 Dos Palos, Fresno Co.	28-12-11	4,514	suspended
Bergman, Harry, No. 1 Dos Palos, Fresno Co.	12-12-11	6,138	suspended
Union Oil Co., No. 1 Lillis-Kettleman, Fresno Co.	24-12-16	10,944	fish. d.c. & B.
K.N.D.A., No. 56 Kettleman ,Kings Co.	8-22-18	10,154	P.B. 9,220
The Texas Co., No. 1 Coalinga, Fresno Co.	35-20-14	1,040	sd. sh. drlg.
Western Gulf, No. 2 S.P., Fresno Co.	11-17-15	7,379	dry, abd.
Farrell Pet., well No. 1 San Luis Obispo Co.	18-31-12	1,432	hd. sh. drlg.
Willett Oil Co., No. 1 Cholame, San Luis Obispo Co.	10-25-15	3,605	sd. sh. drlg.
Commonwealth Consd. Gas Co., No. 1 Tulare Lake, Kings	21-22-20	2,490	gas, shut in
Commonwealth Consd. Gas Co., No. 3 Tulare Lake, Kings	21-22-20	....	rig, suspended
Kettleman Pac. Oil Co., No. 1 Tulare Lake, Kings Co.	11-23-16	812	sd. sh. drlg.
General Pet., No. 1 Devil's Den, Kings Co.	20-24-18	....	rig, suspended
Buttes Oilfields Co., No. 2 Marysville, Sutter Co.	35.16- 1	6,770	hd. sh. drlg.
Milham Exploration Co., No. 3 Tracy, San Joaquin Co.	24- 3- 4	4,002	C.P. 3,781
Pure Oil Co., No. 1 Chowchilla, Madera Co.	7-10-14	8,220	P.B. 7,150
Northern Counties Pet., No. 1 Tehama, Tehama Co.	25-24- 3	2,031	hd. sh. drlg
The Texas Co., No. 1 Petrolia, Humboldt Co.	1- 2. 2	700	sd. sh. drlg.

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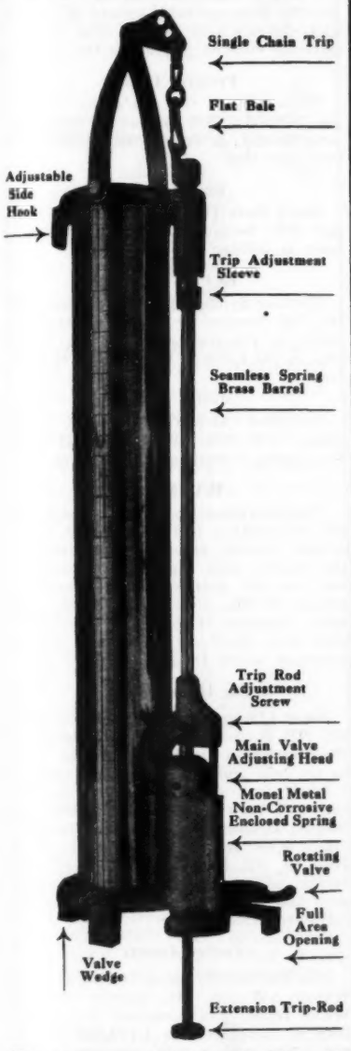

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just about decided if it makes another attempt to blow in they will let it go and take a chance on taming it after it comes in.

In the Santa Fe Springs Field, Associated Oil Co.'s No. 9 Dallugge proved wet at 4,690 feet after the hole had been plugged back from 4,858 feet and will require further work. On a preliminary production test it was brought in pumping 153 bbls. of 34.1 gravity oil per day cutting 46 per cent. Union Oil Co. has finished No. 71 Bell at Santa Fe Springs with an initial of 358 bbls. of relatively clean 32.4 gravity oil per day from the Foix zone at 3,730 feet after the hole had been finished with a 4¾-inch liner carrying 84 feet of perforated.

California Association Elects Officers for 1935

LOS ANGELES, Calif., Dec. 22.—At the annual election of the California Oil and Gas Association C. S. Jones was re-elected for 1935, as were Vice Presidents Ralph B. Lloyd and L. P. St. Clair, and Treasurer H. L. Westbrook. Mr. Jones is vice president, Rio Grande Oil Co., Mr. Lloyd is president, Lloyd Corp., Mr. St. Clair is president, Union Oil Co. of California, and Mr. Westbrook is vice president, Belridge Oil Co.

The following were elected directors: S. Belither, president, Shell Oil Co.; R. A. Broomfield, president, Barnsdall Oil Co. of California; R. E. Collom, vice president, Continental Oil Co.; J. A. Crawford, president, Republic Supply Co. of California; D. S. Faulkner, vice president, National Supply Co. of California; E. B. Gilmore, president, Gilmore Oil Co.; William F. Humphrey, president, Associated Oil Co.; K. R. Kingsbury, president, Standard Oil Co. of California; W. C. McDuffie, receiver, Richfield Oil Co. of California; Alexander B. Macbeth, president, Southern California Gas Co.; A. C. Mattei, executive vice president, Honolulu Oil Corp., Ltd.; S. B. Mosher, president, Signal Oil & Gas Co.; C. E. Olmsted, vice president, Texas Co.; W. B. Pyron, vice president, Western Gulf Oil Co.; William Reinhardt, manager, Kettleman North Dome Association; F. C. Ripley, manager, Chanslor-Canfield Midway Oil Co.; A. L. Weil, president, General Petroleum Corp. of California. The board elected as an additional director, Lester H. Keim, vice president, Oil Well Supply Co.

Eastern Fields

(Continued from Page 214)

W. R. Hays and others have started drilling on the M. J. Livingston farm. Samuel Summer and others have completed rig on the Ada Jones heirs farm. Clem S. Morris is down 1,225 feet on the Morris and Carter lease. W. H. Bickle has made another location on the U. S. Fluharty lease. In Clay district, W. A. Bickerstaff has a rig on the John Grogan farm. Rinehart and others are testing at 2,059 feet on the A. J. Glass farm in direction of the line between the Lost Run and Pike Pools.

In Roane County, on Feniel Run in Curtis district, Reedy Oil & Gas Co. has a rig on the Lizzie Moore farm, about 250 feet north of the test on part of this farm now subdivided. In this district, Henderson Oil Co. is down 950 feet on the George L. Ball farm. On Calf Pen Run of Laurel Creek in Spencer district, George E. Smith has started drilling a second test on the L. A. Short farm about 700 feet east of No. 1. In Smithfield district, Jackson and Bowers have made a location on the J. A. and Amy Sarver heirs farm. Charles Despard and others are down 1,620 feet in a second test on the Charles Starcher farm. Howard Bartlett is rigging up on the C. C. Brannon farm.

In Wirt County, Fred Morehead has moved a machine to a location for No. 8 on the J. W. Hickman farm in Clay district. In Wood County, Roberts and Pepper have made location for a second test on the John Roberts farm in Walker district.

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Completions in New Mexico Featured Week's Developments in Rocky Mountain Territory

By TOLBERT R. INGRAM
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Dec. 24.—Sale of state leases in New Mexico brought bonuses aggregating $38,013 for 22,749 acres. Phillips Petroleum Co.'s No. 9 Woolworth, in the Cooper Pool, made 80 bbls. an hour. Two wells are near completion in this field. The Texas Co.'s No. 2 Rector, in the Eunice Pool, flowed 56 bbls. the first hour. Tide Water Oil Co.'s No. 4 Coleman is making 1,500 to 2,000 bbls. of fluid after plugging back. Empire Gas & Fuel Co.'s No. 1 Dyer, an isolated well on the east side of the Jal Pool, made 700 bbls. a day on a drill stem test. One new location was released in the Jal area and another wildcat is being started west of the Lea Pool.

There were no completions or new locations in Colorado.

Sale of Ohio Oil Co. properties in Salt Creek, Wyoming, to Sinclair interests has been concluded. Consolidated also contracted for 1,000 bbls. a day of Lance Creek crude, and purchased additional marketing facilities in Utah, Wyoming and Idaho. The Drumheller test on the Manderson Dome in Big Horn County is showing 40 feet of oil in the Torchlight sand and will test.

Three completions and two new locations were reported in the Cut Bank Field in Montana. Other operations in the state are practically at a standstill.

The Ramsey test in southern Utah has a good show of oil at 3,071 feet.

NEW MEXICO

Phillips Petroleum Co. has completed its No. 9 Woolworth, C NW NE Section 27-24-36, in the Cooper Pool, at a total depth of 3,506 feet. It averaged 80 bbls. an hour and 4,146,000 feet of gas a day on a five-hour test through the tubing from the pay at 3,490-3,506 feet.

The Empire Gas & Fuel Co.'s No. 1 Everett, C NE SW Section 35-24-36, a south offset to the Texas Co.'s No. 1 Everett, reported last week as a completion good for between 10,000 and 15,000 bbls., is a near completion. It was drilled to 3,445 feet in lime and made a drill stem test at 3,410-35 feet, showing for 3,750,000 feet of gas and 490 feet of oil in 30 minutes. The 7-inch was then run to 3,410 feet and cemtnted.

Amerada Petroleum Corp.'s No. 1 Everett, C NE NW Section 35-24-36, a north offset to the Texas Co.'s No. 1 Everett, also is a near completion. Total depth is 3,463 feet. It tested 22,000,000 feet of gas at 3,453 feet. A packer was then set at 3,438 feet and it gauged 5,000,000 feet of gas. It is preparing to drill deeper.

The Texas Co.'s No. 2 Ogg, C NW NE Section 35-24-36, set the 12½-inch at 169 feet and is drilling at 190 feet in red beds, and its No. 3 Ogg, C SW NW Section 35-24-36, has rig up. The Stanolind Oil & Gas Co.'s No. 3-A Meyers, C SW NE Section 22-24-36, made a drill stem test at 3,491-3,545 feet and showed for 100,000 feet of gas and no oil. The same company's No. 4-A Meyers, C NE SW Section 22-24-36, has rig up, and its No. 5-A Meyers, C NW NE Section 22-24-36, is building rig. Humble Oil & Refining Co.'s No. 3 Cooper, C SW SE Section 14-24-36, had gas at 2,776-92 feet and is drilling ahead at 3,240 feet in lime. Phillips Petroleum Co.'s No. 10 Woolworth, C NE NW Section 26-24-36, is fishing for bit at 3,087 feet, total depth. Simms Oil Co.'s No. 1 Woolworth, C SE NE Section 35-24-36, is drilling at 920 feet in red beds.

Eunice Area

The Texas Co.'s No. 2 Rector, C SE SE Section 30-21-36, a south offset to the same company's No. 1 Rector and at the southern end of the development, was completed at 3,941 feet and flowed 56 bbls. the first hour and 44 bbls. the second hour through the 2½-inch tubing at 3,931 feet. The gas is estimated at 2,000,000 a day. The pay was at 3,897-41 feet and the elevation is 3,604 feet.

Tide Water Oil Co.'s No. 4 Coleman, C SE NE Section 17-21-36, an outside well on the east side of the field, showed sulphur water at 3,943 feet, total depth, and was plugged back to 3,933 feet and is estimated at 1,500 to 2,000 bbls. of fluid a day, of which approximately 40 per cent is water.

Continental Oil Co.'s No. 18-A-2 Lockhart, C SW SE Section 18-21-36, an outside well on the west side of the field, showed 3,650 feet of oil in a 10-minute drill stem test at 3,840-80 feet and is preparing to run casing and complete. It is one-third of a mile west of No. 1 Lockhart, SE cor. Section 18-, which made 422 bbls. initial when completed in 1931.

Continental Oil Co.'s No. 1-B-9 Meyers, C NE SW Section 9-21-36, is waiting after cementing the 5½-inch at 3,769 feet. A drill stem test at 3,720-50 feet showed 500,000 feet of gas.

Gypsy Oil Co.'s No. 2 Bell-State, C SE SE Section 8-21-36, is drilling at 2,965 feet in lime, and Tide Water Oil Co.'s No. 3 State-Foster, C NW NE Section 8-21-36, has rig up. Skelly Oil Co.'s No. 1-B State, C NW NW Section 16-21-36, is drilling at 3,440 feet in lime, and its No. 1-C State, C NE NW Section 29-21-36, is rigging up rotary. The Atlantic Oil Co.'s No. 1-F State, C SW SW Section 29-21-36, is preparing to acidize. Peerless Oil & Gas Co.'s No. 1 State, C NW SW Section 29-21-36, is drilling at 3,342 feet in lime, and the Amerada Petroleum Corp.'s No. 1-D State, C NW NW Section 1-20-36, has rig up. Shell Petroleum Corp.'s No. 1 State-Endura, C SE NE Section 12-21-35, is coring below 3,498 feet.

Jal Area

Empire Gas & Fuel Co.'s No. 1 Dyer, NE SW SE Section 31-25-37, an isolated location on the east side of the pool, is being completed as a good producer. A drill stem test at 3,223-52 feet showed for 700 bbls. a day, estimated, and 2,000,000 feet of gas. It is running the 7-inch. The location is one-third of a mile east of Stanolind Oil & Gas Co.'s No. 22 Gregory, which was completed several years ago by the Midwest Refining Co. These are the only wells in the section and no wells have been drilled on the offset sections to the north, east or west. There is one gas well on the section to the south.

Continental Oil Co.'s No. 12-A-2 Wells, C NW NE Section 12-25-36, at the north end of the developed area, and an east offset to a producer, flowed sulphur water through the drill stem at 3,518 feet, total depth, and was plugged back to 3,500 feet and is testing. It gauged 18,000,000 feet of gas a day through the drill stem at 3,340-50 feet.

A new location is the Southern Petroleum Exploration Corp.'s No. 2-A Ascarate, C SE NW Section 24-25-36, a south offset to its No. 1 Ascarate, which was completed last year for 5,000 bbls. a day. Cellar and pits are being dug.

Repollo Oil Co.'s No. 2 Hanagan, NE cor. SW Section 12-25-36, is drilling at 1,175 feet in red beds. Continental Oil Co.'s No. 13-A-2-X Sholes, NW cor. SE Section 13-25-36, is drilling at 770 feet in red beds.

Hobbs Area

Gypsy Oil Co.'s No. 1 North Grimes, SW cor. Section 21-18-38, is drilling at 3,225 feet in anhydrite, and Continental Oil Co.'s No. 2 Grimes, SE SE Section 28-18-38, cemented the 7⅝-inch at 1,634 feet. Shell Petroleum Corp.'s No. 2 Sanger, SW SE SW Section 27-18-38, is waiting after cementing the 12½-inch at 233 feet and its No. 2-D State, SE NE NW Section 24-18-37, is still a location. J. P. Cusack and others' No. 1 Moon, SW cor. NE Section 28-18-38, has rig up, and the Amerada Petroleum Corp. and Skelly Oil Co.'s No. 1-A State, NE SW NW Section 24-18-37, is rigging up rotary. National Securities Oil Co.'s No. 1 Linam, NE SE SW Section 33-18-37, is cleaning out at 4,175 feet.

Lea Area

The Texas Co.'s No. 4-A Lynch, C SE NE Section 34-20-34, one-third of a mile northeast of the discovery well and the same distance southeast of No. 3-A Lynch, a producer, and oil and water at 3,739-40 feet and an increase in fluid at 3,750-51, total depth. The same company's No. 1 Elliott, C NE NE Section 22-20-34, two-thirds of a mile southwest of No. 1 Lea, the discovery well in the North Lea extension, is showing for a small well with water. It made one-half a bailer of water an hour at 3,660 feet and increased at 3,690 feet. At 3,698-3,701 feet it made 1½ bailers of oil per hour. Same company's No. 1 Moore, C NW SE Section 21-20-32, a wildcat west of the Lea Pool, is building rig.

The Texas Co.'s No. 1 Swearingin, C NE SW Section 8-20-34, 4 miles north and west of its No. 1 Lea, in the north extension, is drilling at 2,740 feet in salt and anhydrite.

Maljamar Area

Maljamar Oil & Gas Co.'s No. 4 Baish, NE SE NE Section 21-17-32, is shut down at 3,065 feet, 1,000 feet above the objective.

Eddy County

Stanolind Oil & Gas Co.'s No. 1 Duncan, E SE SW Section 30-21-30, Big Eddy district, bottomed the salt at 3,167 feet and is drilling in lime at 3,321 feet.

San Miguel County

Cabra Springs Oil & Gas Co.'s No. 1 West Pino Mesa, CWL Section 19-12n-22, set the 8¼-inch at 985 feet and is drilling at 1,135 feet, and its No. 1 Thompson, SW NE NE Section 22-12-22, is fishing at 3,803 feet with 3 strings of tools in the hole.

Roosevelt County

Claudell Development Co.'s No. 1 Wilmes, C SW SE Section 21-2s-30, Pomeroy district, is drilling at 2,750 feet in anhydrite and red beds.

McKinley County

Royer Oil Co.'s No. 1 Santa Fe Railroad, C NW SW Section 13-15-10w, Walker Dome, is running the 6⅝-inch below 540 feet, in blue shale, to stop caving.

COLORADO

Oil City Petroleum Co.'s No. 1-A Garnett, Lot 3, SW Section 25-33n-2e, Price district, Archuleta County, which last week was reported showing oil in the top of the Muddy at 970 feet, is standing waiting for inspection by representative of the U. S. Geological Survey. It will be necessary to run pipe. When drilling stopped for the night, there was no oil in the hole. The next morning oil had risen 15 feet. At last reports it had risen 100 feet. Several barrels have been bailed out, but no test has been made. No water was reported. The oil is of paraffin base, probably around 40 gravity and congeals very readily. The drill apparently stopped just above the sand.

Prowers County

Trojan Oil & Gas Co.'s No. 1 Lotus Oil, NW NE NE Section 15-23-46, Lamar district, is drilling at 4,160 feet in shale and lime.

Park County

South Park Oil Co.'s No. 1 State, SE cor. SW Section 16-11-75, Hartsel district, is drilling below 700 feet.

El Paso County

Utemoor Syndicate's No. 2 Carson, NW NE NE Section 10-16-66, Fountain district, is reported abandoned at 2,547 feet, in the Lakota. The top was at 2,515 feet.

Moffat County

Stanolind Oil & Gas Co.'s No. 22-SD Shaw, NW SE NW Section 27-4n-92, Iles Dome, is drilling at 2,587 feet.

WYOMING

The California Co.'s No. 1 Holst, NE SE SE Section 13-17-77, Quealy Dome, Albany County, reported a completion in the Muddy sand last week at 3,146-75 feet for 60 bbls. initial, is pumping around 50 bbls. a day and will fill 1,000 bbls. of storage on the lease. It will then shut down until spring when it will be deepened to the Dakota.

Big Horn County

Jerome Drumheller's No. 1 Martin, SW SE NE Section 17-49-91, a wildcat on the Manderson Dome, has 40 feet of oil in the hole from the Torchlight sand at 1,329-41 feet, and is preparing to test. Ohio Oil Co.'s No. 1 Hoskins, SW cor. Section 14-56-97, Byron district, is drilling at 3,150 feet. Taylor Oil Co.'s No. 1 Hoskins, SE SE Section 25-56-97, has backed out about half of the lost drill stem and is fishing for tht remainder at 5,275 feet, total depth.

Carbon County

The Sinclair-Wyoming Oil Co.'s No. 4 Wertz, SW cor. SE Section 7-26-89, Wertz Dome, was completed in the Lakota at 3,528 feet for 1,770,000 feet of gas a day with a rock pressure of 450 pounds. This is an old well.

Argo Oil Co.'s No. 1 Johnson-Union Pacific, NE cor. SE Section 5-24-87, O'Brien Springs, which gives considerable promise of opening a new pool, is changing over to cable tools at 3,072 feet, total depth. It topped the Dakota at 3,059 feet and cores from 14 feet of sand showed oil and gas saturation. The 9⅝-inch has been cemented on top of the sand and bailing down is about ready to start.

Ohio Oil Co. and California Co.'s No. 1 Kyle, NE SE NE Section 26-21-79, Medicine Bow, is drilling at 1,370 feet, and Ohio Oil Co.'s No. 1 Morris, C NW SE Section 6-20-77, Diamond Dome, is shut down temporarily at 5,192 feet. It topped the Muddy at 5,150 feet and that horizon showed nothing of value.

Earl W. Reeder, Inc.'s No. 1 Union Pacific, C SW SW Section 19-20-83, Overland Dome, is drilling at 5,906 feet in gray shale, and its No. 1 Whitford, SW SE SE Section 24-20-83, is plugging

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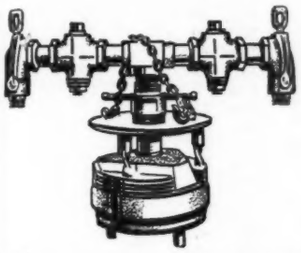

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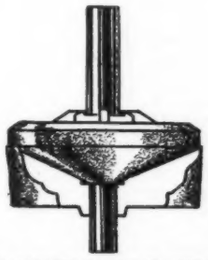

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MacClatchie Manufacturing Co.
Compton, California

back from 2,350 feet to 700 feet to straighten hole.

Converse County

E. B. Jones and others' No. 1 State, SW cor. Section 16-32-69, Shawnee district, is spudding at 100 feet. John Ackard's No. 1 Daniels, SW SE Section 17-32-71, Brenning Basin, is underreaming pipe to bottom at 2,350 feet.

Fremont County

Tropic Oil Co.'s No. 1 Government, C SE SW Section 34-27-90, Lost Soldier district, is drilling at 2,701 feet. Mid-American Oil Co.'s No. 2 Government, C NE SW Section 14-28-92, Sheep Creek, is redrilling at 300 feet.

Hot Springs County

The California Exploration Co.'s No. 1 Government, NE SE NE Section 12-44-97, Waugh Dome, is drilling at 3,772 feet in blue lime.

MONTANA

Glacier County

Operations in Montana are practically at a standstill for the winter except in Cut Bank, in which field three completions and two new locations were reported. C. P. Castle's No. 1 State, SW cor. Section 36-35-6w, was drilled to 2,800 feet and found the pay at 2,768-81 feet. Oil rose 2,400 feet in the hole, but there was not enough gas to flow it. R. C. Tarrant's No. 5 Haglund, Jr., C SW NE Section 13-34-5w, pumped 45 bbls. first seven hours from pay at 2,775-2,805 feet. Nadeau Brothers' No. 1 Farmers State Bank, C NW NE Section 17-33-5w, in the south extension, had 750 feet of oil from the pay at 2,915-20 feet.

New locations are the Consolidated Gas Co.'s No. 4 Tribal, NE SE SE Section 34-35-6w, rigging up, and Marshall and others' No. 1 Wilkins, NE SE NE Section 12-33-6w, which is rigging up.

UTAH

The Ramsey Petroleum Corp.'s No. 1 Senior, SW NE SW Section 13-26-7e, Last Chance district, Emery County, is reported to have a strong show of oil at 3,071 feet in the Kaibab (Permian), the bailer bringing up considerable oil. It had 30,000,000 feet of gas at 2,742 feet.

Central West Fields

(Continued from Page 213)

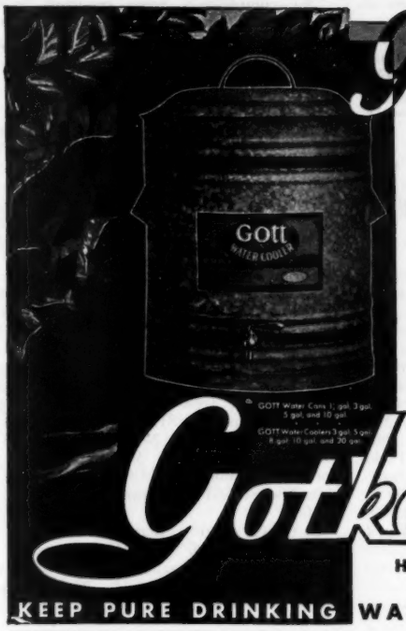
Township, is a light gas well at 2,325 feet.

In Muskingum County, Pure Oil Co.'s No. 2 on the Oscar Mikesell farm, Lot 2¼, Jackson Township, produced 48 bbls. initial at 3,213 feet. E. J. Edman's No. 2 Price B. Spencer farm, Lot 3, Muskingum Township, was dry at 800 feet.

In Tuscarawas County, Status Development Co. is drilling No. 2 on the Fair-

LEGAL

Department of the Interior, U. S. Land Office, Las Cruces, New Mexico. Notice is hereby given that Baish Field Unit W½, W½ SE¼ Sec. 15, T. 17 S., R. 32 E., N.M. P.M., and Eaves Field Unit W½, W½ Sec. 24, W½ NW¼, SE¼ NW¼ Sec. 25, T. 26 S., R. 36 E., N.M.P.M., New Mexico, are offered to the qualified bidder of the highest amount offered per acre as a bonus for the privilege of leasing the land under section 17 of the act of February 25, 1920 (41 Stat. 437), at the customary royalty scale in the standard lease form, at the sale to be held in the United States Land Office in Las Cruces at 10: A.M., on January 14, 1935. Any lease issued will be subject to the regulations governing the sale of leases approved September 22, 1922, and to compliance with the Code of Fair Competition for the Petroleum Industry as signed by the President on August 19, 1933, and any modifications thereto heretofore or hereafter made, and to abide by the provisions of any act of Congress heretofore or hereafter enacted, or any code or regulatory measure adopted by authority thereof, for the regulation or control of the petroleum industry. The successful bidder must deposit on the date of the sale with the officer in charge of the sale a certified check on a solvent bank, or cash, for one-fifth of the amount bid by him and file the showing of qualifications to receive a lease required by section 15 of the said regulations. Bidders are warned against violations of the provisions of section 59 U. S. Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. (Signed) Paul A. Reach, Register.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field Brick Co.'s property, in Lot 4, Fairfield Township.

Meigs Development Co. is drilling No. 2 Edith Star farm, Lot 10, Rutland Township, Meigs County. Ohio Fuel Gas Co. is drilling No. 2 on the H. M. Durst farm, in Lebanon Township, same county.

KENTUCKY

Nine completions were reported from the Kentucky Field, one a dry hole and eight oil producers with an initial of 180 bbls. Near Oak Station in Ohio County, Cumberland Petroleum Co. and others' No. 3 Guy Richards farm, produced an initial of 20 bbls. B. Thomas & Co.'s No. 1 Clarence Farmers farm, was a dry hole.

Inland Oil & Gas Co.'s No. 1 on the George Craig farm, near Oak Station, same county, produced 20 bbls. initial. Snowden-McSweeney Co.'s No. 17 G. E. Fuqua farm, Ohio County, produced 25 bbls. initial. J. C. Miller and others' No. 4 J. C. Smith farm produced 15 bbls. Carpenter and others' No. 3 O. Dodd farm, produced 20 bbls. initial. Hildebrand and others' No. 3 W. Smith farm, same county, produced an initial of 30 bbls. B. E. Calvert and others' No. 4 J. T. Smith farm, same county, produced 40 bbls. initial, and H. B. Bastress and others' test on the McCarty heirs farm, showed an initial of 10 bbls.

No completions were reported from the Indiana, Illinois and Lima Fields for the week.

Oklahoma Fields

(Continued from Page 220)

ty, was estimated at 20 bbls. a day from sand at 506-14 feet. R. A. Godfrey's No. 3 Massinburg, NW NE NE SE Section 26-7s-5e, was dry and abandoned at 431 feet. Centrop Oil Co. was drilling at 195 feet in No. 6 Burge, 1,155 feet from the north and 1,155 feet from the east lines of SE Section 25-7s-5e. R. A. Godfrey had machine in for No. 2 Cox, 330 feet from south and 825 feet from east lines of NE Section 26-7s-5e. J. S. Batson had machine in to start No. 1 Lynn, 165 feet south and 825 feet east of NW cor. Section 36-7s-5e. Charles Newson has made a location for No. 4 fee, 860 feet from north and 825 feet from east lines of SE Section 36-7s-5e.

Centrop Oil Co.'s No. 2 Minter, SW cor. Section 30-7s-6e, Marshall County, pumped 40 bbls. the first day and 25 bbls. the second day from sand at 502-05 feet.

In Carter County, Korchmer & Smith's No. 2 Lynn, NE SE NE Section 31-1s-2w, is a 7-bbl. completion from broken sands at 2,190-2,360 feet. Murphy & Boggs completed No. 1 Eaves, SW SE SE Section 30-1s-2w, a 301-bbl. well from a series of sands from 1,499 to 1,880 feet. It had been acidized.

New work in Carter County included I. W. Merrick's No. 11 Schermerhorn, 795 feet from north and 897 feet from west lines of SW Section 5-4s-3w, drilling at 680 feet; Schermerhorn Oil Corp.'s No. 32 fee, 520 feet from north and 390 feet from west lines of SW Section 5-4s-3w, drilling at 1,300 feet.

Stephens County

In Stephens County, Western Oil Corp.'s No. 1-B Brown, NE SW NE Section 30-1s-8w, was dry and abandoned at 2,387 feet. It has rig up for No. 2-B Brown, 1,100 feet north and 660 feet east of C Section 30-1s-8w. Raizen Brothers completed a 6-bbl. well in No. 10 Brown, SE Section 2-2s-5w, and Magnolia Petroleum Co. completed an 8-bbl. well in No. 11 Wilson, SW Section 1-2s-5w, both in shallow sands. Magnolia had material on the ground for No. 16 Wilson, 810 feet from north and 990 feet from east lines of SE Section 1-2s-5w. W. J. McAllister has an estimated 75-bbl. well in No. 1 Nigh, NE NE SW Section 11-2s-8w, at 1,484-95 feet. Beard & Kolb have rig up for No. 4 Wade, 153 feet north and 138 feet east of C Section 11-2s-8w.

Atoka County

In Atoka County, Brookshire and others will abandon No. 1 Rowland, NW NE NE Section 18-3s-10e. It was a hole full of water at 3,844 feet. This test penetrated Mayes, Sycamore, Woodford, Sylvan, Viola, Simpson, sandy dolomite, sandy lime and black lime on the way down.

Texas Production Tax on 31,343,321 Barrels

AUSTIN, Tex., Dec. 24.—State production taxes were paid on 2,018,645 bbls. more of oil in October than the month's allowable production under Railroad Commission regulations, according to records of the comptroller's department.

Taxes of 2 cents a barrel were paid on 31,343,321 bbls. in October, while the total allowable was 29,324,676 bbls. Part of the excess was illegal oil, and part depletion of previous storage. Excess on which taxes was paid over the allowable for September was 776,175 bbls.

The excess for the state fiscal year ending August 31 was 9,744,223 bbls., most of which, due to length of the period, was "hot oil."

The year's production on which taxes were paid was 364,721,615 bbls., and the allowable 354,977,392 bbls. The State averaged only a few barrels less than a million daily throughout the 12-month period.

The production tax for the year amounted to $7,478,058; and for September of this year, $631,425; and for October, $639,370.

CRUDE OIL PRICES

Bradford District Crude in National Transit Lines

1923	Feb.	1	$3.80
	Feb.	3	3.90
	Feb.	8	4.00
	Feb.	15	4.25
	Apr.	11	4.00
	May	3	3.75
	May	14	3.50
	June	18	3.25
	July	10	3.00
	Sept.	20	2.75
	Nov.	13	2.60
	Dec.	14	2.85
	Dec.	20	3.10
1924	Jan.	1	3.25
	Jan.	7	3.40
	Jan.	10	3.65
	Jan.	14	3.75
	Jan.	19	4.00
	Jan.	25	4.25
	Jan.	30	4.50
	May	10	4.25
	June	14	3.75
	July	2	3.25
	Aug.	5	3.00
	Aug.	21	2.85
	Dec.	22	3.10
1925	Jan.	23	3.35
	Jan.	31	3.60
	Feb.	14	3.85
	Feb.	23	3.65
	Apr.	17	3.40
	May	20	3.65
	June	6	3.90
	Aug.	11	3.65
	Aug.	17	3.40
	Aug.	29	3.15
	Nov.	23	3.40
	Dec.	12	3.65
1926	Feb.	13	3.90
	Mar.	8	3.65
	July	8	3.40
	Nov.	18	3.15
1927	Jan.	14	3.40
	Feb.	23	3.25
	Mar.	7	3.15
	Apr.	13	2.90
	Aug.	1	2.65
	Dec.	4	2.75
	Dec.	17	2.80
1928	June	13	3.05
	July	9	3.20
	Sept.	14	3.35
	Oct.	13	3.45
	Nov.	9	3.60
	Dec.	14	3.85
1929	Jan.	4	4.10
	July	1	4.05
	July	16	3.80
	Aug.	1	3.55
	Aug.	16	3.30
	Oct.	1	3.05
1930	Feb.	5	3.00
	Feb.	17	2.75
	May	1	2.50

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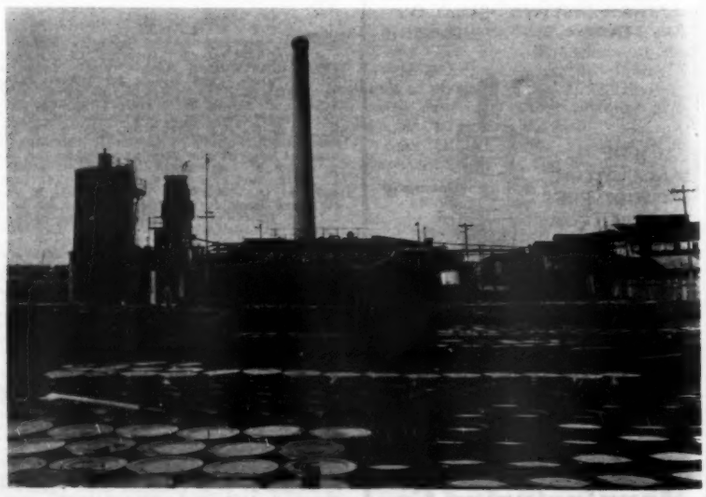

Vacuum distillation unit and asphalt plant at the Drohobycz, Poland refinery of Galicyjskie Towarzystwonaftowe "Galicja" Spolka Akcyjna one of the largest companies operating in Poland

TECHNICAL QUESTIONS ANSWERED

By Charles K. Francis, Ph. D., Technical Editor

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible.

Inquiries must be signed but only the given initials will be printed. The source of the question is considered to be confidential.

Questions requiring a discussion of patents, the use of intricate formulas, extended computations, or cost estimates cannot be considered.

When the matter is of general interest the reply will be published within a reasonable time.

Phenol and Chlorex Solvents for Making Lub Oils

Will it be possible for you to furnish an outline of the phenol process, also the chlorex process for making lubricating oils?—M. M. C.

The S.A.E. numbers for lubricating oils were explained on my page in The Oil and Gas Journal, March 22, 1934. The S.A.E. numbers are based on viscosity ranges as determined in the Saybolt viscosimeter at temperatures of 100°, 130° and 210° F. Any further details such as flash, fire, color, pourpoint, carbon residue, etc., are covered in the contracts made between the seller and buyer.

The solvent methods for the manufacture of lubricating oils have been described in The Oil and Gas Journal. Several references are mentioned at the bottom of this discussion. A number of early references to solvent treatment were mentioned by Prof. A. W. Nash in the article published in The Oil and Gas Journal, May 30, 1933, page 52. Professor Nash describes the phenol method as follows:

"In this method phenol or cresol with 5 to 15 per cent of water is employed as the treating material. The refining is carried out at a temperature of 60° C. The raffinate obtained is freed from solvent by means of a caustic soda wash, while the phenol in the extract is recovered by fractional extraction with both cold and hot phenolic water, and the phenol concentrated by distillation. Undiluted liquid phenol is used by the Standard Oil Development Co. for refining lubricating oil distillates. Treatment is carried out at a temperature below 60° C. and the raffinate is freed from phenol by distillation. For lighter mineral oil distillates the liquid phenol is replaced by a double solvent consisting of methyl alcohol and 65-95 per cent of phenol."

The chlorex method depends upon the use of dichloroethyl ether as the selective solvent material. This liquid dissolves comparatively small quantities of the oils having a high viscosity index, leaving a raffinate having a high viscosity index. The practice as used at the Casper, Wyo., plant of the Standard Oil Co. of Indiana was described by Page, Buchler & Diggs in The Oil and Gas Journal, April 20, 1933. The oil to be treated is subjected to a three-stage countercurrent treatment. Twice used solvent is placed in the first treating tank, once used solvent in the second and fresh solvent in the third. The quantity of wax does not interfere with the action of the solvent which is used because of its high selectivity. Chlorex has a high specific gravity and therefore permits rapid separation of the two phases formed. The extraction is usually carried on between 30° and 80° F., according to the viscosity of the oils treated. The chlorex is recovered from both raffinate and extract by treating with steam.

Additional references found in The Oil and Gas Journal are as follows: In the issue of October 26, 1933, there were several articles referring to solvent extraction process. Pool and Wadsworth, Solvent Extraction Method for Improvement of Lubricating Oil; Bahlke, Brown and Diwoky, Commercial Application of Chlorex Process, page 60; Wilson and Keith, Jr., Economic Aspects of Solvent Refining in the Manufacture of Improved Lubricating Oils, July 19, 1934, page 14. D. B. Williams, The Chlorex Process and the Trend Toward Lighter Lubricating Oils, September 20, 1934, page 13. W. T. Ziegenhain, Solvent Extraction and Dewaxing Plants, March 29, 1934, page 44.

Marcusson Open Cup Flash Tester For Germany and Sweden

Will you kindly supply, if possible, a description of the Marcusson flash tester? Where is this instrument used?—J. C. A.

The description of the Marcusson Open Cup Flash Tester and method is abstracted from Richtlinien fuer Einkauf und Pruefung von Schmiermitteln, 6th ed., (1933) pp. 92-97.

The flashpoint is defined as the temperature at which vapors are generated from an oil under the conditions of test and in such quantities that the mixture of oil vapors and air can be ignited at once from the approach of a flame.

The testing apparatus is designated DVM-flashpoint tester with open cup, standardized Marcusson tester, the cup having inside dimensions of 40 by 40 mm. There are two therometers used, one having a range of from 50° to 260° C. and the other from 190° to 410° C. These thermometers are calibrated for an immersion of 30 mm. and corrected for the exposed mercury column.

The cup is clamped into position in a sand-bath and appropriate thermometers set so that the bulb is but 5 mm. from the walls of the cup and 3 mm. from the bottom.

An ignition device is provided, furnishing a flame adjusted to 10 mm.

When making a test, oils which flash above 250° C. are poured into the cup up to the lower (red) mark which is 15 mm. from the top, and all other oils to the upper (black) mark, which is 10 mm. from the top.

The height of the Bunsen flame for heating the oil is regulated to an increase of 5° to 10° C. per minute. This rate is reduced to 3 ± 0.5° C. per minute when approaching the flashpoint.

Testing is started at about 30° C. below the flashpoint for oils flashing below 250° C. and about 50° C. below the flashpoint for oils flashing above 250° C. The test flame is passed across the oil once for each degree of temperature increase, moving in the plane of the cup rim at a uniform rate of speed, a complete passage requiring one second.

The temperature at which ignition of the gases occurs for the first time is noted and recorded as the flashpoint, single determination. Five single determinations are made using a fresh sample of oil for each, and the average of these designated the flashpoint. However, when making a report, all single determinations should be recorded.

Single determinations should check plus or minus 4° C. The tolerance permitted is 5° C.

This apparatus and method is official in Germany and is also used in Sweden.

Petroleum Products Suitable for Tanning Leather

My attention has been called to a notice reporting the use of petroleum products for the manufacture of leather and I should like to know just what products are used in this way. If you can explain what is done and have any outside references, the information will be appreciated.—A. R. B.

The sludges formed when treating petroleum oils have attracted attention as a possible source of many different commercial compounds. The residues of an acidic nature have been investigated as to their application in the tanning of leather. Several patents have been obtained for the manufacture of petroleum products claimed to be tanning agents. A review of the subject was published in Collegium, by R. Straus, page 540, and the summary following has been prepared from this source.

Nastukoff prepared two substances, formolite and desoxyn. Formolite was obtained from petroleum by first treating with sulphuric acid, then adding formaldehyde; this is diluted with water and steamed. The precipitate of formolite is separated, washed with petroleum ether and then treated in an autoclave with nitric acid. This product is soluble in water and dilute alkali. Desoxyn is made from a mixture of pulverized wood, glucose and sulphuric acid. The first solution is blended with petroleum, diluted with water and steamed. The precipitate is dried, extracted with naphtha and boiled with nitric acid. These materials produce a light colored leather. For details see German Patent 532,893, 1931; U. S. Patent 1,806,910.

Hees and Woelfel start with a petroleum oil and 50 per cent unsaturated hydrocarbons. The lower boiling fractions are separated and the residue run into 15 to 30 per cent oleum. The acid is separated and the gum-like product is distilled with steam. The product forms a colloidal mixture in water suitable for tanning.

Another raw material is the product from the sulphur dioxide process. The sulphonated oil is treated in the presence of acid anhydrides or chlorides. The sulphonation products are finally condensed with formaldehyde, bleached with oxidizing agents or treatment with chlorine. See German Patents 545,968; 546,943; and 557,651, 1932.

Klipper, Suknarowsky and Chierer use the sludge. This is treated with water and solvents, such as alcohol, aldehydes, or ketones, or mixtures of these with solvents of bitumen; such as benzol and chloroform. The acid is neutralized with alkali, ammonia, aniline or pyridine and the solvent removed by distillation. The tanning agent is extracted with water or alcohol.

Equivalents for Natural Gas, Oil and Coal Under Boilers

It is the practice when evaluating different fuels, oil, coal, and gas, to arrive at the money value through the results obtained in making steam. The tables I have are made from tests made many years ago and I wish to know if you have any recent publications on the subject?—K. L. C.

When endeavoring to determine the comparative heating value of fuels it is essential that all conditions be fully detailed and considered in the calculations. The construction and the size of the furnace must be related to the fuel that is to be burned. Any equivalents that may be selected should be considered as rough approximations. The equivalents for natural gas, oil and coal under boilers prepared by the American Gas Association, as presented in Combustion, 3d edition, 1932, p. 195, are based upon the data to be found in Natural Gas For Steam Power, by George I. Rhodes. Natural gas is assumed to have a heating value to 1,000 B.t.u. per cubic foot. The oil weighs 340.6 pounds per barrel rated at 141,000 B.t.u. per gallon, and the short ton of 2,000 pounds is used for the coal.

The tabulation from Combustion follows:

EQUIVALENTS FOR NATURAL GAS, OIL AND COAL IN BOILERS

Boiler type—	Fuel oil (cu. ft. per bbl.)	Alabama coal (cu. ft. per ton) Pulverized	Alabama coal (cu. ft. per ton) Stoker and hand-fired
A	6,640 to 6,650	27,410 to 27,150	26,070 to 25,000
B	6,660 6,670	27,170 26,810	25,330 23,890
C	6,410 6,360	26,140 25,390	25,030 23,490
D	6,270 6,210	25,570 24,410	24,000 21,870
E	6,160 6,120	....	21,430 18,610
F	6,150 6,110	....	19,430 16,000

A. Modern large boilers fully equipped with water walls, economizers and air preheaters in which flue gas temperatures as low as 360° F. are frequently experienced and in which the temperature differential due to excess air is probably one-half of that experienced in the ordinary plant. Such furnaces are commonly used for pulverized coal, oil or natural gas, practically unchanged for the different fuels.

B. Modern large boilers equipped with water walls only and without economizers or air preheaters. In these settings normal flue gas temperatures are to be expected and low amounts of excess air are possible with all fuels.

C. Large boilers with fire-brick lined furnaces such as are commonly used for stoker firing and for oil firing and sometimes used for pulverized coal firing in converted plants. In these furnaces it is necessary to use considerable amounts of excess air to keep furnace temperatures within safe operating range.

D. Boilers of ordinary size with furnaces as above.

E. Hand-fired furnaces with good operation.

F. Small hand-fired furnaces with ordinary operation.

NATURAL GAS DEVELOPMENTS

Mecosta County Reserve Issue Before Commission

MUSKEGON, Mich., Dec. 24.—Determination whether natural gas reserves in the Austin Township, Mecosta County Pool, are sufficient to supply large industrial consumers of Greater Muskegon would be required before the Michigan Public Utilities Commission would authorize the Muskegon Gas Co. to make permanent arrangements to supply the industries, it was indicated at a hearing in Lansing last week.

The hearing was called to consider a petition of the Muskegon Gas Co. for permission to serve the industries through an emergency connection established with the West Michigan Consumers Co.'s distribution system for a period of 30 days.

While an official order was not issued, approval of the emergency connection established December 6 for the 30-day period until January 6 was indicated. If continuous service through the emergency connection to provide Greater Muskegon indudstries with an adequate supply of gas is desired after January 6 a further hearing before the commission will be required.

Lewis B. Balch, chairman, and Manfred K. Toeppen, consulting engineer of the commission, questioned representatives of both companies with regard to the Mecosta County supply being adequate to serve local domestic consumers over a long period of years if service to the industries were established on a permanent basis.

It was recalled officials of the Muskegon Gas Co. and its affiliated concern, the American Michigan Pipe Line Co., had assured the commission when they established the new natural gas service for domestic consumers there was a sufficient supply at least for 10 years and possibly for 20 years in the Central Michigan Field.

Commission officials indicated they would insist upon adequate protection for the domestic consumers before approving any permanent service to the industries.

The temporary service is expected to be approved at a rate of 40 cents a 1,000 feet to be paid the Muskegon Gas Co. by the West Michigan Consumers Co. This is 5 cents per 1,000 feet higher than the minimum industrial rate of 35 cents established by the Muskegon Gas Co. under its new schedule of natural gas rates approved by the commission. The regular schedule is $1.08 per 1,000 feet for the first 50,000, 50 cents per 1,000 for the next 50,000, 40 cents per 1,000 for the next 100,000, and 35 cents per 1.000 for all over 200,000 feet.

Muskegon Gas Co. has supplied the West Michigan Co. up to 250,000 feet a day since the emergency connection was established. The West Michigan has been able to carry its own load over the week-end on some other days when industrial consumption did not exceed its supply of about 2,000,000 feet a day from the old Muskegon Field.

The Muskegon Gas Co., which has just completed final adjustment of burners for use of natural gas, has a daily send-out of about 2,500,000 feet, including the industrial service. It was indicated by George M. Clark, attorney for the West Michigan company, the industrial gas concern is making other arrangements to serve its customers.

The West Michigan company also was represented at the hearing by John L. Robinson, general manager. The two American Light & Traction Co. subsidiaries were represented by Chester N. Chubb, of Chicago, president of both concerns and vice president of the parent company; James Lawrence, of Chicago, vice president of the parent concern and a director of the Muskegon Gas Co.; Dean W. Flowers, of Muskegon, vice president and general manager of both subsidiaries, and Glenn M. Chamberlain, of Grand Rapids, vice president of the pipe line company.

Sounding Legislators on Sour Gas Law Repeal

AUSTIN, Tex., Dec. 24.—Natural gas exporters are feeling out the newly-elected Texas legisuature on the bill to repeal the sour gas law. This bill is not a compromise measure, nor an offset of further legislation to protect independent Texas competitors. It is a direct effort to restore the former condition. Two other bills are being drawn on behalf of Texas independent producers, and a third on behalf of the state treasury.

Lawyers and economists working over the first—a ratable taking and price-control bill, insist it will comply with every constitutional provision. It will permit a state agency to set aside reserves or fields wholly for fuel and light purposes, and to fix quotas for stripping elsewhere; and, with power to say whether gas shall be produced for a given purpose, it will assert authority to say whether it may be produced at specified price levels.

The second bill would prescribe absolute divorcement from the business of operating gas wells and the operation of gas pipe line transportation systems. This may be only one phase of a general divorcement bill to separate production, refining, transportation and retailing of oil and gas and their products.

A senate committee has recommended increasing the 2 per cent gas tax to not less than 1 cent per 1,000 feet—a 20 to 16 per cent tax at present—and to provide where gas is sold between co-subsidiaries or affiliates at less than 4 cents per 1,000 feet, a state tax of up to 4 cents shall be levied.

Less stringent, another bill is being shaped to levy one-half cent per 1,000 feet as production taxes, or from 8 to 10 per cent on the original sale price. The sales tax on gasoline, it is pointed out, is 100 per cent of the original sales price, and consumers of this most universal requirement do not especially kick about it.

Sponsors of the price-control bill point out if prices cannot be regulated directly by law, they can be reached through the operation of a tax scale based inversely on price.

WACO RATE HEARING

AUSTIN, Tex., Dec. 24.—Examiner F. L. Kuykendall of the State Railroad Commission began a hearing at Waco on appeal of Texas Cities Gas Co. from a city ordinance directing a 15 per cent reduction in rates, and for an increased rate.

E. A. Steinberger, chief valuations engineer, and P. McDonald Biddison introduced exhibits setting the reproduction cost of the Waco gas distribution system at $1,780,103 as of July 1, 1933.

Company witnesses testified operating revenues for 12 months were $481,000 and operating expenses $443,848, of which $41,057 was for taxes, other than federal income taxes. The company showed a deficit of $45,864, D. A. Hulcy, assistant to the president, testified; and if the lower rate had been in effect, the company would have shown an actual cash deficit of $17,000 for operating expenses alone.

Kansas Case Adjourned to Resume on January 22

TOPEKA, Kans., Dec. 22.—At the conclusion of the direct testimony of F. C. Hamilton, Cities Service Gas Co. engineer, the Kansas Corporation Commission announced adjournment over the holidays of its investigation of the rates and valuation of the Cities Service Gas Co. The hearings will be resumed January 22.

Mr. Hamilton said the pipe line was entitled to an allowance of $10,000,000 as going convern value. He claimed as one item making up that total $7,242,615 as the cost of carrying idle equipment while patronage was reaching the saturation point in the first three years after construction of the pipe line.

The witness testified that if the organization had an opportunity to purchase a gas transportation system which was as efficient as the Cities Service Gas Co. was known to him to be, the organization would be willing to pay an additional $10,000,000 for it, in preference to purchasing for less another similar system not having adequate outlet for its gas and a personnel of doubtful efficiency.

Mr. Hamilton said because of the efficiency of the personnel of the Cities Service Gas Co. he attributed a value of $500,000 to the company for its 835 employes. Those two figures, he said, were the only ones which he had definitely determined as components of the $10,000,000 making the going concern value.

No allowance was made in the valuation prepared by engineers for the commission for "going value" for the pipe line. Courts in recent years have not sustained the claim for it as freely as formerly in utility valuation contests. The failure of the commission's engineers to include it is taken to mean the Kansas commission will base a new policy relating to going value in its decision in the case of the Cities Service Gas Co.

As establishing a historical basis for claiming an allowance for going value, Mr. Hamilton recited the progressive steps in the introduction and use of natural gas in the area. He told of the formation of pipe line companies and testified that owners of artificial gas distributing systems in the territory and their customers were hesitatnt to adopt the use of the new fuel, even though the price at which it was offered in 1906 was 25 cents per 1,000 feet, one-fourth of the rate then being paid for articicial gas. In territory where acceptance of gas as a fuel was slow, the witness testified, the industry successfully had surmounted the obstacles of hostility, financial difficulties and inadequacy of the available supply of gas, to become an established factor in the life of the Southwest.

Karl F. Griffith Dies After Motor Accident

FORT WORTH, Tex., Dec. 24.—Karl F. Griffith, 42, vice president and general counsel of the Lone Star Gas Co., died at Waxahachie, Thursday of injuries received Wednesday night when his automobile, which he was repairing, was struck by another car.

Mr. Griffith was en route to his home in Dallas from Waco in company with D. A. Hulcy, assistant to the president of the company. He had been trying a rate case.

Mr. Griffith, who conducted the Lone Star's various rate and other legal controversies, was born in Lancaster, Ohio, and attended Ohio State University. After graduation he was employed by L. B. Denning, now president of the Lone Star company, in the legal department of the Ohio Fuel Supply Co. Mr. Griffith was regarded as the outstanding legal authority on gas rate matters in the Southwest. His successful handling of the Lone Star's rate disputes in Texas and Oklahoma earned him a reputation which caused him to be consulted by attorneys in similar cases throughout the country.

Gas Industry Showed Improvement During 1934

NEW YORK, Dec. 24.—The gas industry in the United States in 1934 showed an improvement for the first time since 1930 registering an increase in customers, sales and revenue over the preceding year, according to Alexander Forward, managing director of the American Gas Association.

Manufactured and natural gas companies, supplying towns and cities with a population of 80,000,000, served a total of 15,700,000 customers. Of these, 10,000,000 were served by the manufactured gas industry and the remaining 5,700,000 were served by the natural gas industry. Sales of the manufactured gas industry gained 6.9 per cent over 1933, aggregating 363,000,000,000 feet. Public utility sales of the natural gas industry, excluding carbon black and field use, amounted to 934,000,000,000 feet, an increase of 14.1 per cent over 1933. Revenues of the industry totaled $698,000,000. Manufactured gas companies earned $382,000,000 and natural gas companies $316,000,000, a gain of only 1.1 per cent and 4.6 per cent respectively.

Investment in the gas industry was approximately the same as for 1933. For the manufactured gas industry investment amounted to $2,500,000,000 and for the natural gas industry $2,300,000,000.

Gas range sales in 1934 showed remarkable increase. Approximately 1,000,000 gas ranges were sold in the year, representing a gain of about 280,000, or nearly 40 per cent over 1933. It is interesting to note that nearly 70 per cent of these sales consisted of relatively high priced ranges incorporating modern automatic features, such as oven heat control, etc.

PRELIMINARY ESTIMATES ON THE GAS INDUSTRY

	1934	1933	Per cent change
Manufactured Gas			
Customers	10,000,000	9,800,000	+1.9
Gas sales (M.C.F.)	363,000,000	339,542,000	+6.9
Revenue (dollars)	382,000,000	377,888,000	+1.1
Natural Gas			
Customers	5,700,000	5,500,000	+3.6
Gas sales (M.C.F.)	934,000,000	818,231,000	+14.1
Revenue (dollars)	316,000,000	302,026,000	+4.6

NATURAL GAS APPEAL

EDMONTON, Alberta, Dec. 22.—Following the decision of the Alberta appellate court allowing the appeal of a group of insurance companies and Corona Hotel, Ltd. in their damage action against Northwestern Utilities, Ltd., the latter company has secured leave to appeal direct to the judicial committee of the privy council, the court of last resort. The appeal will probably be heard in London, England, early next summer. Damages and costs amounting to over $200,000 are involved.

EXTEND GAS SYSTEM

HESPELER, Ontario, Dec. 22.—The Dominion Natural Gas Co. is making some extensions to its distributing system here.

FIELD PROBLEMS FROM READERS

Edited by Thomas F. Smiley

This department is conducted in order that men connected with the drilling, producing and transporting branches of the petroleum industry may obtain aid in solving problems that confront them in their work. Readers are invited to send questions freely. These questions will be placed in the hands of persons capable of answering them authoritatively, and the answers, based on the best available information, will be published.

Each question should give as much detail as possible, especially if it involves depths of sands, types of sands and operations on adjoining or nearby properties. The source of questions will be considered confidential, and only the initials of the sender will be published. Questions involving patented processes, intricate formulas or estimates of cost cannot be answered. If an immediate answer is important, one will be given by mail when the writer requests it.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or improved old ones.

Crude Oil Properties Which Are Essential to Its Production

I want to ask something about those properties of crude oil that are factors in getting it out of its underground reservoir to the surface. I know that its viscosity and its specific gravity are important, but I believe there are other properties almost as important and I would like to know about these.—T. G. K.

As you yourself say, viscosity and gravity are important factors in the movement of crude through the sand to the well hole. Other properties of crude that are essential in its production are surface tension, solvent power for paraffin, and pressure exerted by the liquid. The following facts concerning these properties are provided by D. L. Katz, of the research department of the Phillips Petroleum Co.:

"Adhesion tension and surface tension give a measurement of the adherence of oil to the sand and of one factor in the travel of oil-gas mixtures through the porous formations, respectively. The solvent power of a crude for the paraffin present is very important, as insufficient solvent power causes paraffin to precipitate and retard and handicap production. The pressure exerted by the gaseous constituents in the liquid is a measurement of the ability of the crude to force other liquid into the producing well and is the intensive factor of the work available to produce the crude naturally by the gas-drive method. It is these properties that vary with the concentration of the gaseous constituents in the crude oil and which vary with gas liberation or vaporization.

"Surface tension or interfacial tension between a gas and the crude oil is reduced by the presence of gaseous constituents in the crude. The surface tension is about one-third as much for crude oil saturated with gas at 2,000 pounds pressure as the atmospheric crude. This may be interpreted as requiring less energy to form new gas-liquid surfaces for the crude containing large amounts of gaseous constituents. This lowering in surface tension is generally expected to facilitate the production of crude oil, but the opposite effect may occur under some conditions.

"Distinct from the interfacial tension between gas and liquid is the interfacial tension between the liquid and the sand grains, usually termed adhesion tension. F. E. Bartell and F. L. Miller measured surface adhesion tensions for several crude oils, and showed that in general the crudes of lower specific gravity have lower surface tensions. They also showed that there is no relation between the surface and adhesion tension for the crudes used. Although there is no direct evidence, it may be expected that the presence of gaseous constituents will lower the adhesion tension of the crude.

"The effect of gas liberation upon the solubility of paraffin in crude oil has two effects. The loss of liquid due to the vaporization of the gas reduces the volume of the solvent for a given quantity of paraffin. Also, the solubility of paraffin changes with the composition of the crude.

"The classifying of pressure exerted by the liquid as a property rather than a condition of the crude may be elementary. However, this phenomenon is so often neglected that it bears emphasis. As stated above, the pressure under which a crude exists does not always coincide with that which the gaseous constituents in the crude exert. If a crude oil that exerts a pressure of 1,000 pounds is allowed to vaporize part of its gaseous constituents by a reduction in pressure to 900 pounds, the resultant crude will be able to exert a pressure of only 900 pounds, even though the pressure may subsequently be raised. It is possible to put some of the gaseous constituents back into the crude oil with high pressure over a period of time but the possibility of this occurring to any extent has been shown highly improbable. Therefore, if the pressure on the oil has been lowered, the crude will never again give off gas at the higher pressure to assist in the movement of oil into the well."

Derrick Erected on Barge Solves Drilling Problem in Louisiana

In the course of a discussion about the use of barges for carrying drilling equipment in Louisiana swamp land which you described recently in your answer to a question by N. D. H. the statement was made that one oil company in Louisiana has a derrick built on a barge, moving it about from one location to another for drilling wells in the open water. If such a thing is done I wish you would explain how the mechanical difficulties are met. Particularly I would like to know how the barge is kept from overturning in handling heavy drilling equipment.—N. A. F.

Such floating derricks as you refer to are used in Louisiana. The first one was contrived by the Jefferson Island Oil Co. in its operations in that part of the Jefferson Island salt dome underlying Lake Peigneur, a body of water 10 to 15 feet deep in Iberia Parish, Louisiana. In its early operations, which were in open water a mile from shore, the company set up rigs on piling and built bridges for moving equipment to the well locations. This was extremely expensive and the idea of setting up a derrick and drilling machinery permanently on a specially constructed barge was hit upon. The barge was built and proved a success.

This barge, made of all-welded steel, is about 60 feet long, 40 feet wide and 5½ feet deep, drawing less than 6 inches. The problem you mention, that of keeping the craft from overturning, was solved by providing a 4-foot slot, or bay, as it is called, down the middle of the barge. This permits removal of the barge from around the pipe and connections of a completed well.

Mounted on the barge are a 64-foot steel, tubular derrick, electrically driven drawworks, pumps, electric motors for the drawworks and pumps, the mud pit and pipe racks. The center of the derrick and rotary is directly over the "bay" in the center of the barge, which is ready to drill at any time, carrying all pipe and other equipment along with it. It is only necessary to tow the barge to location and anchor it which is done by four spudders, 8-inch pipes, one in each corner, which, passing through the barge, are driven into the bed of the lake. Power for the electric rig is supplied by a submarine cable which the barge carries and which can be connected quickly to the nearest power line. Permanent power lines have been strung on poles across the lake and around the location of the operations.

To permit the barge to rise and fall with the water level of the lake during drilling operations and while the barge is connected to the casing of a well, telescopic joints have been devised for the connections. The level of the barge is maintained by an accurate distribution of drilling machinery. The buoyancy of the barge, which enables it to draw little water under load, together with the weight and balance, makes the barge a steady foundation.

After completion of a well it is only necessary to disconnect the barge from the well head connections, pull the four spudders and tow the barge to a new location. The barge slips away from around the well through the slot or bay. The outfit has been moved from one well and started drilling on another in as short a time as 10 minutes.

Not only was a tremendous financial saving effected but also the barge made it possible to speed up development of the field and provided an efficient and convenient method of operation.

As a result of the success of this barge, other barge drilling outfits were put into operation by other companies in southern Louisiana where water located fields and wildcat areas are numerous.

Makes Little Difference Whether Tubing Is Set High or Low

I find there is a wide difference of opinion about the question of where the tubing ought to be set in a flowing well. Some oil men say it should be set close to the bottom and others say it should be set well up in the hole. I would appreciate some information on this point. Can you tell me what the petroleum engineers say concerning this question?—E. A. S.

As a matter of fact there will be little difference in mechanical efficiency in flowing a well by natural energy through tubing set high or low in the hole. The fluid level will be the same inside and outside of the tubing so the actual lift will be from the top of that fluid level to the surface and the position of the tubing in the hole will in no way affect this mechanical lift.

The position of tubing in a well seems to be largely determined by the operator's experience and his personal opinion and is also dependent to some extent upon the conditions existing in the well in question.

Any general answer to this question would hardly serve you to advantage. It is believed to be much more important to determine as closely as possible the proper size of tubing in relation to the well's capacity or production rate to establish the lowest possible gas-oil ratio.

If the formation pressure is known and the production rate is fixed, it is possible to estimate the volume of gas required to lift this fluid to the surface and the flow string of tubing or casing can be selected to give the best results and control formation pressures most.

There has been a great deal published from time to time about tubing wells for natural flow and it seems quite impossible to give generalized recommendations, for each well presents its own problem, and during the life of the well many changes will occur that may make it necessary to change both size and position of tubing.

It is recommended that you give more thought to the conservation of gas and formation pressure than to any other detail because there are numerous methods of lifting the fluid from the bottom to the top of the well by mechanical means, but it is very difficult and costly to try to reproduce natural energy within the reservoir.

Why Was It Called That?

DEPLETION

The word "depletion" as used in the oil industry commonly refers to the progressive exhaustion of underground deposits of petroleum and natural gas. It came into more frequent use with the advent of income tax laws, because of deductions allowed on account of depletion. The word is derived from the Latin "deplere," to empty out. Literally it means to "unfill," since the Latin word is made from "de," indicating the reversing or undoing of an action, and "plere," to fill.

PERSONAL PARAGRAPHS

W. A. SHANK, of Kilgore, Tex., was a business visitor in Ada, Seminole, Tulsa and other Oklahoma points.

* * *

ING. J. MARTYNIK, of Dresden, Germany, drilling engineer and contractor, has been on a visit to London, England.

* * *

I. H. PATTEN, JR., and L. M. RAUCH have retired as members of the Oklahoma State Marketing Committee, functioning under Region 4 of the oil code.

* * *

ANDREW RUTHERFORD, for some months in charge of the operations of Oil City Royalties, Ltd., in the Waterton Lakes Park area in southern Alberta, has taken charge of the Raven Oils' test on the Watson structure near Lundbreck, Alberta.

* * *

BRUCE BRAXTON YOUNG, vice president of the Pilot Point Refining Company, and REX YOUNG, manager of the Grandfield, Okla., refinery of the Bell Oil & Gas Company, spent Christmas with their parents, MR. and MRS. A. F. YOUNG of Tulsa.

* * *

E. B. REESER, president of the Barnsdall Corporation, has returned home from a business trip to the East.

* * *

FRANK LONG, of the Oklahoma Natural Gas Company, has returned from Kansas City, where he was a business visitor.

* * *

JOE T. DICKERSON, attorney for the Shell Petroleum Corporation, spent two days last week at general headquarters, St. Louis, Mo.

* * *

WATSON B. JONES, production superintendent of the Ryan Consolidated Oil Corporation, spent the holidays at Louisville, Ky., his old home.

* * *

J. C. WEBSTER, president of the Webster Oil & Gas Company of San Antonio, Tex., was a visitor at Ada and Sulphur, Okla., last week.

* * *

L. R. FORTIER is now district geologist and R. D. OHRENSHALL assistant district geologist for Kansas of the Shell Petroleum Corporation.

* * *

J. B. LEISER, regional geologist of the Kansas-Panhandle area of the Shell Petroleum Corporation, and MISS ESTHER WEIDEMANN, were married at Kansas City, Mo.

* * *

W. J. COLLIER, general production superintendent of the British American Oil Producing Company, with MRS. COLLIER, left for Henderson, Tex., to spend the holidays with their son JACK COLLIER.

* * *

WILLIAM J. SHERRY, petroleum geologist and independent oil operator, and MRS. SHERRY, have returned from an extensive tour of northern Mexico, West Texas, New Mexico, Arizona and California.

* * *

ALEX W. McCOY, of Ponca City, Okla., vice president and general manager of the E. W. Marland Oil Company, spent several days in Tulsa last week. He is past president of the American Association of Petroleum Geologists.

H. D. PATRIDGE, Indian Territory Illuminating Oil Company, of Bartlesville, Okla., has accepted the chairmanship of the simplification committee of the National Association of Purchasing Agents.

* * *

W. J. HYDE and W. HAGARTY, of Moose Jaw, Saskatchewan, visited Lethbridge and other southern Alberta points recently in connection with the drilling operations of Franco Oils, Ltd., on the Cardston structure.

* * *

HASWELL GRANT, of Mount Pleasant, Mich., former president and now a director of the Oil and Gas Association of Michigan, spent Christmas with relatives and friends in Kansas City, Mo. He was accompanied by his family.

* * *

MR. and MRS. E. M. WANNER have arrived in Tulsa from Soengei, Gerong, Sumatra, Netherlands East Indies. Mr. Wanner is employed with the Netherlandsche Koloniale Petroleum Maatschappij, and is on furlough. Mrs. Wanner was the former Miss Florence Evans, daughter of MR. and MRS. DAVID EVANS of Tulsa. They returned by the European route.

HARVEY BLAIR and WILLIS HARTMAN, wildcatters of Wichita, Kans., were Tulsa visitors last week.

* * *

DR. M. B. BLACKLER, manager of the Egyptian government refinery, Suez, has arrived in London, England, on vacation.

* * *

W. C. SCHLEUTER, of the Refinery Supply Company, and FRED E. COOPER, oil field division, Allis-Chalmers Company, were recent visitors in the eastern states.

* * *

R. S. ELLISON, president of the Stanolind Crude Oil Purchasing Company, Tulsa, left for Colorado to visit his mother during the holidays. He may also visit in his old home in Casper, Wyo.

* * *

CARL W. VOGT, Mid-Continent and Gulf Coast manager of the Shaffer Tool Works, of Brea, Calif., was married recently to MISS MYRTLE JONES, of Houston, Tex. The couple are making a three months' European tour and while abroad Mr. Vogt will make business calls in London, Hague, Germany, Rumania and other European centers.

* * *

J. P. NEAL, of the Stanolind Pipe Line Company, was a Tulsa business visitor in Ada, Okla., during the past week.

* * *

CARLYLE BENNETT, while drilling in the Dover Field, Ontario, seriously injured an arm and lost three fingers. He is in a hospital at Chatham.

* * *

CAMPBELL HUNTER, who visited Alberta recently to inspect the operations of the Hunter Valley Oil Company of which he is president, has returned to London, England.

* * *

WARREN S. CHURCHILL, Tulsa, president of the Oklahoma-Kansas division of the National Drilling Association, was a business visitor in the Oklahoma City Field, Oklahoma, the past week.

* * *

H. E. (HANK) ZOLLER, special assistant to the area exploitation engineer, Shell Petroleum Corporation, is taking a vacation, as is MAX SHERWOOD, assistant to GLENVER McCONNELL, area mechanical engineer.

* * *

JERRY B. NEWBY has been elected president of the Oklahoma City Geological Society; R. W. CAMP, Consolidated Gas Company, vice president; and A. J. MONTGOMERY, Phillips Petroleum Company, secretary-treasurer.

* * *

L. F. McCOLLUM, manager of the exploration department of the Carter Oil Company, and family, Tulsa, journeyed to San Antonio, Tex., to spend the holidays. They formerly lived in San Antonio before moving to Tulsa several months ago.

* * *

RAY SHAW, until recently scout for the Carter Oil Company in the Oklahoma City, Okla., district, has been transferred to the personnel department in the Tulsa offices. NELSON Y. RUTH, former seismograph scout, succeeds Mr. Shaw at Oklahoma City.

DO YOU REMEMBER?

From The Oil and Gas Journal Files

25 Years Ago

December 24, 1909

Tulsa will be connected with oil fields and towns within 50 miles to the south by a projected traction line, if plans go through. The line will commence running cars to Sapulpa by January 1.

W. H. Mitchell, land commissioner for the Gulf Pipe Line Co., dies in Tulsa on December 24.

The Uncle Sam Oil Co. puts it out that it will lay a pipe line from Tulsa to Port Arthur, Tex.

B. G. Dawes, of the Vivian Oil Co., confirms the report that his associates will finance a natural gas line from Vivian, La., to Little Rock, Ark., and towns en route. Orders for 16-inch, 12-inch and smaller sized pipe have been placed with Pittsburgh, Pa., manufacturers, it is said. The work will be done by the Arkansas Natural Gas Co., J. C. Trees, president.

20 Years Ago

December 24, 1914

The latest "substitute for gasoline" is called zoline. The oil industry is not taking it seriously.

Gabe Parker succeeds Dana Kelsey as superintendent of the Union Indian Agency at Muskogee, Okla. Mr. Parker is more than half-blood Choctaw. Mr. Kelsey goes with the Prairie Oil & Gas Co.

A lot of Kansas, Oklahoma and Texas operators are spending Christmas in "old home towns" in New York, Pennsylvania, West Virginia, Ohio, Indiana and Illinois.

White & Sinclair announce they will build a refinery at Baton Rouge, La., and have purchased the site, 2 miles north of the Standard's plant. They also plan a pipe line from the Cushing Field in Oklahoma to the Baton Rouge refinery, a distance of 584 miles, with pumping stations 32 miles apart. Rights of way are being acquired.

10 Years Ago

December 25, 1924

There are 205 operations started in the Wortham Field, in Navarro County, Texas. These will all be completed before February 1, and then good-bye to Wortham. The pipe lines will be able to handle over 200,000 bbls. of oil and there will be no restrictions on production. The present price for East Texas crude is $1.25 per barrel.

P. Chester Thompson, geologist and engineer, predicts that southern Alberta, Canada, will become one of the greatest oil fields in the world, if prohibitive taxation is removed by the dominion government.

The first gas line in New York City was laid 100 years ago for manufactured gas. It ran along Broadway from Grand Street to the Battery, about a mile distant, but the laterals on the side streets brought the total length of the line to 6 miles.

President Coolidge creates the Federal Conservation Board, a commission on oil, consisting of the Secretaries of War, Navy, Interior and Commerce. The board will have power to recommend legislation regulating methods of developing oil structures by co-operation with landowners, to avoid waste. Prominent oil executives approve the action of the President.

G. P. (TIGE) BROWN, scout and field man in the Enid, Okla., district for the Pure Oil Company, was a visitor in Tulsa last week.

* * *

W. A. BELSTRAM, with the Mills Bennett Production Company at Houston, Tex., is in the Herman Hospital, recovering from a recent operation.

* * *

C. J. (JIM) HILLMAN, field representative of the Oil Center Tool Company, Houston, Tex., has returned to Houston following a two weeks' business trip in Oklahoma.

* * *

MISS MARY BREIDT, secretary of the Michigan Gas and Oil Corporation, of Mount Pleasant, Mich., is spending two weeks in the East visiting in Caldwell, N. J. She is planning to return after January 1.

* * *

GEORGE SCHEID, factory representative of the S. M. Jones Company in Michigan, will leave Mount Pleasant after January 1 for the Bradford Field including northwestern Pennsylvania and western New York where he will take up new duties for his company.

* * *

JENE HARPER, of Mount Pleasant, Mich., is spending the holidays with MRS. HARPER on a business and pleasure trip to Dallas, Tex. Mrs. Harper will continue to Hollywood, Calif., for an extended visit while Mr. Harper will return to Mount Pleasant after January 1.

* * *

JOHN P. WEST, district land man in West Texas for Amerada Petroleum Corporation, and a former resident of Tulsa when with the Prairie Oil & Gas Company, passed through Tulsa last week en route to Ohio and Michigan on his annual vacation.

* * *

B. A. LaSELLE has left for his home in San Diego, Calif., after visiting in Tulsa and other Oklahoma oil centers, looking after oil interests.

* * *

O. E. McCLATCHEY, purchasing agent of Barnsdall Companies, is convalescing from serious injuries received recently in Arkansas while on a hunting trip.

* * *

HUGH JOHNSON, formerly farm boss for the Continental Oil Company, at Pampa, Tex., has been promoted to superintendent of the Hobbs Field, New Mexico.

* * *

W. D. BEARD has been chosen chairman of the oil and gas development committee of the Ponca City, Okla., Chamber of Commerce. His aids are R. E. CLARK, LEIGH TALIAFERO, H. B. MULROY and J. K. CLEARY.

* * *

A. D. ENGLE, Oklahoma City, Okla., with many years production experience and formerly superintendent for BERT SCHAFER of Tulsa, has been appointed representative in Oklahoma and Kansas for the Rector Well Equipment Company, manufacturer of casing and tubing.

* * *

JOHN M. HILLS, assistant geologist for Amerada Petroleum Corporation, at Midland, Tex., was married December 11 to MISS SALLY WARD, daughter of PROF. and MRS. FREEMAN WARD, Lafayette College, Easton, Pa., and on December 18 he received his Ph.D. degree from the University of Chicago. Mr. and Mrs. Hills are at home in Midland.

* * *

JOHN McGEE, a native of Eufaula, Okla., and who as a geologist has played a big part in the development of the Panhandle oil field of Northwest Texas, and is now devoting his time between a wildcat near Santa Fe, N. Mex., and a gold mine near Victor, Colo., spent several days in Tulsa last week. With MRS. McGEE he left for Los Angeles, Calif., to spend Christmas.

Farm Boy Now Michigan's Geologist

A teaching position in a small iron mining town in the upper Peninsula of Michigan and a desire for a greater knowledge of the earth led Richard A. Smith into the study of geology and subsequently into the position of Michigan state geologist which he has held since December, 1919.

DR. R. A. SMITH

Doctor Smith was born on a farm near DeWitt, Mich., and attended a country school until he was 16. After graduating from a business college in Lansing, the state capital, he was unable to obtain a position as an accountant because of the panic of 1893 so he went back to the farm, studied on his own, passed a teacher's examination and began to teach in a country school.

In 1899 he entered the Michigan State Normal College in Ypsilanti. He graduated in 1903 and obtained a position as township supervisor of schools in Palmer, a small mining town near Marquette. After three years there he resigned to enter the University of Michigan in the fall of 1907 to take up geology.

He received the degree of A.B. in 1909 and A.M. a year later but continued working for a Ph.D. taking a position as an assistant instructor in geology and later in mineralogy. In September, 1911, he became assistant state geologist and was named state geologist in the fall of 1919.

Doctor Smith was the author of one of Michigan's early and most comprehensive reports on "The Occurrence of Oil and Gas in Michigan," published in 1912, 13 years before the discovery of oil in commercial quantities in the State. He was elected a member of Sigma Xi in 1911 and received the honorary degree of Doctor of Science from Michigan State College in 1932. He is married and has one daughter.

JAMES E. REDMAN has been appointed general sales manager of the Wico Electric Company.

* * *

W. F. (BILL) McMECHAM, Tulsa, returned last week from an intensive trip through Texas oil areas.

* * *

E. B. DILLEY, scout and land man for the Atlantic Oil Producing Company, Houston, Tex., accompanied by MRS. DILLEY, has been spending a vacation in Dallas and Mineral Wells, Tex.

* * *

C. J. BUCER, production clerk for the Sinclair Prairie Oil Company, Fort Worth, Tex., has been transferred to Midland, Tex. M. L. FELDMAN has been promoted to chief clerk in the production division office in Fort Worth.

* * *

DR. GUSTAV EGLOFF, of Universal Oil Products Company, addressed the faculty and students of the University of Wisconsin on "Newer Products From Petroleum." He also spoke at the University of Minnesota on "Science in the Production of Gasoline and Motor Oil."

* * *

JOHN E. MORRISS, president of the A. F. Day Construction Company, pipe line contractor, was in Houston, Tex., last week on business. Mr. Morriss, whose company has just finished laying 70 miles of electrically welded 12-inch pipe for the Lone Star Gas Company, between Long Lake and Riesel, Tex., spent several hours reminiscing with A. S. CRUTCHER, a former business associate in Dallas, Tex.

* * *

WILLIAM H. HOFFMAN, in the civil engineering department of the Humble Oil & Refining Company, McCamey, Tex., is to receive the Purple Heart Medal for services rendered as a private in Company F, 110th Infantry, in France, during the World War. Mr. Hoffman received a serious shoulder wound in the Argonne, that invalided him out of action. He is now in San Francisco, Calif., attending an American Legion conclave of the Department of California, and will attend the Rose Bowl game at Pasadena, Calif., on New Year's Day.

O. T. DAWSON has returned to his post after a month's absence.

* * *

O. W. TERRELL, of Fort Worth, Tex., was a visitor in Tulsa last week.

* * *

MARVIN LEE, geologist of Wichita, Kans., and chairman of the advisory committee to the Kansas Corporation Commission, spent a day in Tulsa last week.

* * *

H. N. MALLON, of Bradford, Pa., president of the S. R. Dresser Manufacturing Company, spent Christmas with his mother and other relatives in Cincinnati, Ohio.

* * *

R. O. LAWRENCE, in charge of the land department for the Sinclair Prairie Oil Company at Houston, Tex., is spending the Christmas holidays with his family at Thayer, Kans.

* * *

GEORGE M. BEVIER, consulting geologist at Houston, Tex., has returned, after an extended pleasure trip through the Central American countries. He was accompanied on the trip by his wife.

* * *

C. J. DEXTER, of Artesia, N. Mex., was re-elected president of the New Mexico Oil and Gas Association at the annual meeting at Artesia. VAN S. WELCH was re-elected vice president and HARRY LEONARD, secretary and treasurer.

* * *

FOREST D. DORN, president of the Forest Oil Corporation, and MRS. DORN were in England when Mr. Dorn was notified of the serious illness of his mother, MRS. C. G. DORN in Bradford, Pa. Mr. and Mrs. Dorn sailed as soon as possible but his mother died before the ship reached New York.

* * *

MISS HELEN LOWRY, who has served as secretary in the Kansas production offices of the Magnolia Petroleum Company at Great Bend, Kans., for three years, has resigned. She has gone to New York where she will make her home with her brother.

* * *

W. H. GADDIS, secretary to RALPH B. ROARK manager of production for the Kansas-Oklahoma-Panhandle district of Shell Petroleum Corporation, is on his annual vacation. H. E. ZOLLER, assistant chief exploitation engineer, has just returned from his vacation.

* * *

DANA H. KELSEY, vice president of Sinclair Prairie Oil Company, has been visiting land offices of the company in Texas. While in Southwest Texas he dropped over to Harlingen to see his father, JOHN B. KELSEY, 97, and a former land man for the old Prairie Oil & Gas Company.

* * *

ALBERT L. STOVER, wealthy retired oil producer in the Bradford Field, who was a newsboy in school days, gave his annual newsboys' dinner to 270 young news merchants in Bradford, Pa., on Thursday, December 27. Mr. Stover carried a newspaper route up and down the several valleys in the Duke Center district when a lad, and has always had a soft spot in his heart for his fellow newsies.

* * *

HOWARD S. BRYANT, district geologist in Kansas for the Skelly Oil Company, has been elected president of the Kansas Geological Society. He succeeds E. C. MONCRIEF, chief geologist for the Derby Oil Company. J. I. DANIELS, geologist for the Continental Oil Company, Ponca City, Okla. was elected vice president, and WARD VICKERY, Wichita, geologist and scout for the Vernon Oil & Gas Company, secretary-treasurer. JOHN KINKEL, district geologist in Kansas for the Phillips Petroleum Company, was elected to a two-year term on the board of directors, and J. P. McKEE, district geologist in Kansas for the Texas Company, was chosen for a one-year term.

MARKET RECORD OF OIL SECURITIES

Active Oil Stocks Listed on New York Stock Exchange

Compiled by Carl H. Pforzheimer Co., 25 Broad Street, New York City, Members New York Stock Exchange and New York Curb Exchange

1934 High	1934 Low	Week ended Dec. 22 Sales	High	Low	Close	Stocks—	Total shares outstanding	Par value	Dividend rate	Payable or last paid	1933 High	1933 Low	1932 High	1932 Low	1931 High	1931 Low
55⅝	39	2,400	48⅝	47	48	Amerada Corp.	774,875	N.P.	50cQ	10-31-34	47⅝	18½	22⅝	12	23	11¼
35¼	21½	7,700	24½	23⅝	24¼	Atlantic Refining	2,673,834	$25	25cQ	12-15-34	32½	12⅝	21⅞	8⅝	23⅝	8⅝
10	5⅞	9,700	6⅛	6	6⅛	Barnsdall Corp. A	2,248,795	$5	....	5-11-31	11	3	7	3⅜	14½	4
19¼	6¾	38,500	8	7	7	Columbia Gas & Elec.	11,610,036	N.P.	....	5-15-34	28⅛	9	21	4¼	45⅝	11⅝
14¼	7¼	33,000	7¾	7½	7½	Consolidated Oil Corp.	14,218,835	N.P.	14c	10-31-34	15¾	5	9	4	15⅞	4½
22¾	15¾	19,800	18	17⅜	17⅝	Continental Oil of Delaware	4,738,593	$5	25c	10-31-34	19⅝	4⅞	9⅜	3⅝	12	5
23¼	12	2,300	16	15	15⅛	General Asphalt	387,149	$10	....	6-15-32	27	4⅝	15½	4¾	47	9⅝
5⅝	2½	2,400	3	2⅝	2¾	Houston Oil (new)	1,098,618	$25	....	10-17-30	7⅜	1⅞	5⅜	1½	14⅛	3
3⅜	¾	1,600	1	¾	¾	Louisiana Oil Refining	1,302,158	N.P.	....	.....	4	⅝	2¼	½	4½	1
14¾	9⅛	9,500	12½	11⅞	12¼	Mid-Continent Petroleum	1,857,912	$10	25c	11-15-34	16	3¾	8⅞	3¾	16¾	5
21⅛	10	500	12½	11	11⅛	National Supply of Delaware	382,591	$25	....	5-15-31	28⅝	4	13	3½	10¼	5
15⅞	8½	21,300	9⅝	9⅛	9½	Ohio Oil Co.	6,563,107	N.P.	15c	12-15-34	17⅝	4¾	11	5	19½	5⅛
9⅜	5½	1,700	8⅜	8	8¼	Pacific Western Oil	1,000,000	N.P.	25c	10-25-33	9½	3	8	3	15	2⅞
2½	⅝	300	¾	⅝	⅝	Panhandle P. & R.	198,770	N.P.	....	.....	4¼	⅜	1¼	¼	4¼	⅝
20¾	13⅜	10,500	14⅝	14	14¼	Phillips Petroleum	4,154,687	N.P.	25c	12-1-34	18¾	4¾	8½	2	16⅝	4
16⅜	7½	8,000	8⅛	7½	7⅞	Plymouth Oil Co.	990,261	$5	4% Stk.	12-22-34	17⅝	6¾	12½	6	18	6
14⅞	6⅛	21,100	7	6⅛	6⅞	Pure Oil	3,038,370	N.P.	....	9-1-30	15⅜	2½	6½	2⅞	11⅞	3¼
39⅛	28⅝	1,200	29⅝	29¼	29⅝	Royal Dutch N. Y. shares	432,224	$14	$1.35	7-31-34	39¾	17⅝	23¾	12½	42⅝	13
38⅜	20¾	4,300	25¼	23¼	24	Seaboard Oil of Delaware	1,204,460	N.P.	15cQ§	12-15-34	43⅜	15	20⅜	6⅝	20¾	5½
11½	6	4,800	6¾	6⅜	6⅜	Shell Union Oil	13,070,625	N.P.	....	6-30-30	11⅝	4	8¾	2½	10¼	2½
89	57	300	69	68	69	Shell Union Oil pfd.	400,000	$100	....	7-1-31	61	28½	65¼	18	78	15
16⅞	7¼	3,700	15⅝	15⅛	15¼	Simms Petroleum	461,000	$10	30c	8-1-34	12⅜	4⅞	7½	3¼	11	3½
11½	6	400	7⅛	6¾	6⅞	Skelly Oil	1,008,514	$25	....	12-15-30	9⅞	3	5¾	2½	12⅞	2
19⅞	12½	35,700	14⅛	13½	13¾	Socony-Vacuum	31,019,694	$25	15cQ	12-15-34	17	6	12¼	5¼	21	8⅝
42⅞	26½	25,700	30½	29⅜	29¾	Standard Oil of California	13,102,900	N.P.	25c	12-15-34	45	19½	31⅞	15⅛	51⅜	23⅛
32¾	23¼	18,300	25¼	24⅞	24⅞	Standard Oil (Indiana)	15,941,894	$25	25cQ	12-15-34	34	17	25⅛	13⅛	38½	13½
41	26	100	31⅛	31⅛	31⅛	Standard Oil of Kansas	200,000	$10	50cQ	10-31-34	39⅞	12¾	16½	7	19	7⅝
50⅛	39¼	28,800	42½	40⅜	42⅛	Standard Oil of New Jersey	25,740,065	$25	50cSA§	12-15-34	47½	22¾	37⅜	19⅞	52½	26
74¼	51½	1,900	66	63½	64	Sun Oil	1,733,013	N.P.	25cQ†	12-15-34	59	35	39⅞	24⅜	45¼	28⅜
29⅜	19¾	20,400	20⅜	19¾	20	Texas Corp.	9,486,417	$25	25cQ	1-1-35	30⅛	10⅜	18¼	9¼	36¼	9⅞
6½	2½	2,400	3¼	3	3⅛	Texas Pacific Coal & Oil	880,703	$10	....	12-31-29	6½	1⅜	4	1½	6½	1⅞
13⅜	8	8,000	8¾	8½	8⅝	Tide Water Associated	5,618,672	N.P.	....	2-16-31	11¾	3⅛	5⅝	2	9	2⅛
86	64½	1,600	84½	82¼	84½	Tide Water Associated pfd.	666,524	$100	$2.	12-22-34	65¼	23½	60	20	68	20½
20½	11⅜	7,100	15½	14⅞	15¼	Union Oil of California	4,386,070	$25	25cQ	11-10-34	23⅜	8½	15⅜	8	26⅝	11
25	15⅝	6,700	25	23¼	24¾	Union Tank Car	1,200,000	N.P.	30cQ	12-1-34	22¾	10½	19¼	11¾	25⅛	16
5¾	2	500	2⅛	2	2⅛	Wilcox Oil & Gas	424,839	$5	....	5-10-28	5½	2	8¾	2¾	9⅜	2¾

*Ex-dividend. †Plus extras in common stock. §Plus extras.

Active Oil Stocks Listed on New York Curb

Compiled by Carl H. Pforzheimer Co., 25 Broad Street, New York City, Members New York Stock Exchange and New York Curb Exchange

1934 High	1934 Low	Week ended Dec. 22 Sales	High	Low	Close	Stocks—	Total shares outstanding	Par value	Dividend rate	Payable or last paid	1933 High	1933 Low	1932 High	1932 Low	1931 High	1931 Low
38	26	150	30½	30¼	30¼	Buckeye Pipe Line Co.	200,000	$50	75cQ	12-15-34	39¾	25	35	17½	56	30
5½	1½	5,500	1⅞	1½	1⅞	Carib Syndicate	579,000	25c	....	.....	7¾	¼	¾	¼	2⅜	¼
150	115	50	138½	138½	138½	Chesebrough Mfg. Co.	120,000	$25	$1Q†	12-28-34	129	71	90	53	129½	75
4¼	1¼	38,600	1½	1¼	1⅜	Cities Service	37,804,394	N.P.	....	6-1-32	6¼	1½	6⅞	1¼	20¾	5
3¼	½	400	⅝	⅛	⅝	Colon Oil	2,200,000	N.P.	....	.....	4	⅛	1¼	¼	3⅛	¼
3⅞	½	900	¾	⅝	⅝	Cosden Oil	399,687	$1	....	.....	3⅞	1⅜	2⅞	¼	3¾	⅜
14⅜	9⅝	7,800	12	11¾	12	Creole Petroleum	6,974,356	$5	....	.....	12	4¾	3⅛	1⅜	3⅞	1⅝
7½	4⅛	2,000	4¾	4⅛	4¾	Darby Petroleum	509,696	$5	25c	1-25-35	8	2⅛	7⅛	1⅝	2½	1⅜
2¼	1	600	1¼	1⅛	1¼	Derby Oil & Refining	263,162	N.P.	....	.....	2¾	⅞	3	1	6	1½
37	30	50	33½	33½	33½	Eureka Pipe Line	50,000	$100	$1Q	11-1-34	41¾	20	35	18	36	19
76¾	49¾	3,200	55	52¾	53½	Gulf Oil Corp.	4,538,101	$25	....	10-1-31	62	24	44¾	23	75½	25⅜
48⅞	33¼	17,700	48⅞	43⅞	48⅞	Humble Oil & Refining (new)	8,923,935	N.P.	25cQ	1-2-35	105½	40	55	35⅝	72	44½
17⅞	12⅝	15,800	16⅞	16½	16¾	Imperial Oil of Canada	26,857,152	N.P.	25cSA†‡	12-1-34	15⅞	6½	10⅞	6¼	18¼	7⅜
6⅞	3¾	300	4	4	4	Indiana Pipe Line	300,000	$10	15cSA†	11-15-34	8	3½	7½	2¾	21⅛	5¼
33⅜	19⅝	13,300	31⅛	29⅞	31⅛	International Petroleum	14,247,088	N.P.	56cSA†‡	12-1-34	23½	8⅞	12¼	8	15½	7⅝
5	2⅛	5,000	4⅞	4⅝	4⅞	Louisiana Land & Exp.	3,000,000	N.P.	....	.....	2¼	⅛	2½	½	2	½
6	3½	200	4½	4¼	4¼	Lion Oil Refining	270,000	N.P.	....	10-27-30	9½	1¼	3½	⅞	6¾	1½
8⅜	4¼	3,000	4¾	4½	4½	Lone Star Gas	5,382,723	N.P.	16cQ§	3-31-34	11⅞	4¾	11	3⅜	29	5½
5½	4	1,400	4¼	4	4⅛	Mountain Producers	1,682,182	$10	15cQ	1-2-35	6½	2½	4⅝	2⅛	5⅞	2
18⅛	13⅛	1,600	13⅞	13⅛	13⅛	National Fuel Gas	3,810,183	N.P.	25cQ	10-15-34	20	10	14⅝	8	26½	9⅜
9½	7	1,300	7⅞	7	7	National Transit	509,000	$12.50	35cSA	12-15-34	10	5½	10½	6	17½	5
2½	1⅜	800	2¼	2	2⅛	New Bradford Oil	1,445,202	$5	10c	9-15-34	2⅛	½	⅞	¼	1½	½
2¾	1	300	1¼	1¼	1¼	New Mexico and Arizona	1,000,000	$1	....	.....	1⅞	½	1¼	⅜	3	¾
4¾	3	No sales	..	..	..	New York Transit	100,000	$5	15cSA	10-15-34	4⅞	3	9¾	7½	14½	5⅞
7	4⅝	100	5¼	5¼	5¼	Northern Pipe Line	120,000	$10	25cSA	1-2-35	6⅛	4¼	5½	3⅛	35½	20
2⅝	⅞	6,700	2	1⅝	2	Pantepec Oil	1,608,700	N.P.	....	.....	3⅜	⅛	⅝	⅛	2	⅝
3⅜	⅞	300	1¼	1⅛	1¼	Ryan Consolidated	296,931	N.P.	....	.....	4¼	⅝	2⅛	⅝	3	⅝
7⅞	5½	900	6¼	6	6	Salt Creek Producers	1,496,859	$10	20cQ	11-1-34	9¼	3½	5½	2⅞	7⅝	2¾
26½	17½	1,200	23	22⅝	22⅞	South Penn Oil	1,200,000	$25	30cQ	12-31-34	22⅛	11	16½	9⅝	23⅞	9¼
5¼	3½	200	3¾	3¾	3¾	Southern Pipe Line	100,000	$10	15cSA	9-1-34	6	2⅛	10	3¾	17	7
47	41	No sales	..	..	..	Southwest Penna. Pipe Lines	35,000	$50	$1Q	12-31-34	43	24½	37	27	42½	25
17¾	14⅝	5,000	17¾	17⅜	17¾	Standard Oil of Kentucky	2,606,983	$10	25cQ†	12-15-34	19¼	8⅝	15⅞	8⅞	23⅝	12⅛
16⅞	8½	100	8⅞	8⅞	8⅞	Standard Oil of Nebraska	190,822	$25	....	6-20-34	20½	11	19	10¼	36½	16
28½	12¼	2,400	14	13½	14	Standard Oil of Ohio	753,740	$25	....	1-3-33	41	15½	30⅛	15½	62½	23
2	⅛	1,500	1⅛	1	1⅛	Sunray Oil	1,610,810	$1	....	4-15-31	1½	¼	⅝	⅛	5¼	⅛
11	4⅝	700	6⅛	5¾	5¾	Texon Oil & Land	936,028	N.P.	15cQ†	12-29-34	13¾	6¼	10½	4½	12⅞	2½

*Ex-dividend. †Plus extras. ‡Payable in Canadian funds. §Payable in preferred stock.

Note—In comparing highs and lows for the several years in the two tables, it will be necessary to take into consideration cases where there have been stock split-ups.

Kansas Wildcats

(Continued from Page 212)

Gypsy Oil Co.'s No. 1 Dotson, SW SW NW Sec. 25-20-1w.
T.D. 2,856 ft.
Johnson & Carey et al's No. 1 Dyck, SE NE SE Sec. 35-22-5w.
12-in. 770 ft.; S.D. 1,750 ft.
Lario O. & G. Co. and Reserve Pet. Co.'s No. 1 Shepherd, SW SW NW Sec. 13-22-5w.
Mississippi lime 3,565 ft.; set 8-in. 3,585 ft.
Lario O. & G. Co. et al's No. 1 Schreg, NW SE SW Sec. 22-19-4w.
10-in. 1,723 ft.; drlg. 1,985 ft.
Stark & Well's No. 1 Smith, NW cor. Sec. 30-19-8w.
Location.
Langston et al's No. 1 Markle, NE SW Sec. 1-20-9w.
Show of oil 2,890-2,906 ft.; S.D.
Yingling et al's No. 1 Maupin, NW SW SW Sec. 1-18-8w.
Viola 3,233-39 ft.; pumped 104 bbls. oil, 2 bbls. wtr. in 24 hrs.

ROOKS COUNTY

Stearns & Streeter's No. 1 Meyers, NE NW NW Sec. 34-9-16w.
T.D. 2,598 ft.; S.D.

RUSH COUNTY

Flynn et al's No. 1 Hartman, SW SE NW Sec. 4-18-16w.
Location.
Lario O. & G. Co. and Phillips Pet. Co.'s No. 1 Benbow, NW NE NE Sec. 12-17-19w.
Anhydrite 1,250 ft.; set 12-in. 1,252 ft.

RUSSELL COUNTY

J. Brousk and R. D. Bailey's No. 1 Kluesner, NW SE Sec. 34-15-12w.
Rig.
Blair et al's No. 1 Fink, SW NW SE Sec. 16-14-14w.
Rigging up.
Eldorado Ref. Co.'s No. 1 Stratman, SW SE SE Sec. 32-14-11w.
H.F.W. 3,245 ft.; T.D. 3,250 ft.; abd.
Eldorado Ref. Co.'s No. 1 Walz, SE NE NW Sec. 29-13-11w.
Rig.
Darby Pet. Co.'s No. 1 Jarus, NW SW NE Sec. 16-16-12w.
Siliceous 3,348 ft.; 1,200 ft. oil in hole in 11 hrs.
Hartman & Blair's No. 1 Sullivan, NE NE SE Sec. 2-14-15w.
Rig.
Hartman & Blair's No. 1 Gurney, SE SE NW Sec. 23-14-14w.
Rigged up.
Lario O. & G. Co. et al's No. 1 Nuss, NW SW SW Sec. 11-16-14w.
Location.
Lario O. & G. Co. et al's No. 1 Moore, 760 ft. S and 660 ft. E, NW cor. Sec. 34-13-12w.
Cellar.
Tom Palmer et al's No. 1 Herbel, NW SW Sec. 4-13-11w.
Viola lime 3,676 ft.; drlg. 3,704 ft.
Wolf Creek Oil Co.'s No. 1 Donovan, SW SW SE Sec. 10-15-15w.
20-in. 43 ft.; drlg. 355 ft.
Wolf Creek Oil Co.'s No. 1 Kraft, SW cor. Sec. 26-16-11w.
Cellar.
Wolf Creek Oil Co. et al's No. 1 Penn Mutual, SW cor. Sec. 22-15-15w.
Location.

SALINE COUNTY

Dieter et al's No. 1 Herrington, NE NW SE Sec. 3-13-1w.
S.D. 1,785 ft.

SCOTT COUNTY

Atlantic Oil Prod. Co.'s No. 1 Vaniman, C SE NE Sec. 15-20-33w.
6-in. liner 4,630 ft.; pay 4,670-86 ft.; swabbed 9½ bbls. oil per hr.

SEDGWICK COUNTY

Aladdin Pet. Co. et al's No. 1 D. Lauck, SE NE NW Sec. 21-28-2.
Rig.
Allison & Fitzwilliams et al's No. 1 Struthers, NE SW Sec. 34-28-3w.
H.F.W. 3,176-87 ft.; T.D. 3,213 ft.; U.R. 8-in. cag.
Cameron, Derby Oil Co. and Trees' No. 1 Brainard, SW SE NW Sec. 19-24-2.
Rigging up.
Leo Keller et al's No. 1 Russell, SW SW NW Sec. 16-29-2.
Cellar.
Syndicate O. & G. Co. et al's No. 1 Ratcliff, NE NW NW Sec. 30-26-2.
6-in. 3,065 ft.; drlg. 3,159 ft.

STAFFORD COUNTY

Atlantic Oil Prod. Co.'s No. 1 Hohner, NW SE SE NE Sec. 31-23-14w.
Location.
Atlantic Oil Prod. Co. and Phillips Pet. Co.'s No. 1 Guthrie, C NW NW Sec. 16-25-11w.
10-in. 2,050 ft.; T.D. 2,202 ft.; fishing.

SUMNER COUNTY

T. Palmer's No. 1 Wentworth, NW NW NE Sec. 9-35-2.
Drlg. 1,205 ft.

TREGO COUNTY

Central Commercial's No. 1 Wagg, NW NW SE Sec. 17-13-21w.
Rig.
Marathon Oil Co.'s No. 1 Kline, SW SE Sec. 19-14-24w.
Drlg. 5,160 ft.

USE OF METALS IN OIL INDUSTRY

Oil men have been invited to attend a joint symposium on "The Use of Metals in the Petroleum Industry," to be held February 21, 1935, by the Institute of Metals, Iron and Steel, and the petroleum divisions of the American Institute of Mining and Metallurgical Engineers.

Sessions will convene in the Engineering Societies Building at 29 West Thirty-ninth Street, New York, on the last day of the American Institute's annual meeting, which is scheduled for February 18 to 21, 1935. Papers will be presented on heat-resisting alloys, heat interchangers and condensers, refinery pumps, sucker rods, and developments in pipe and tube products.

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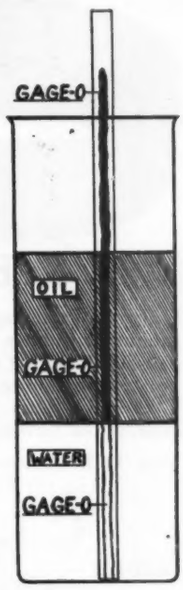

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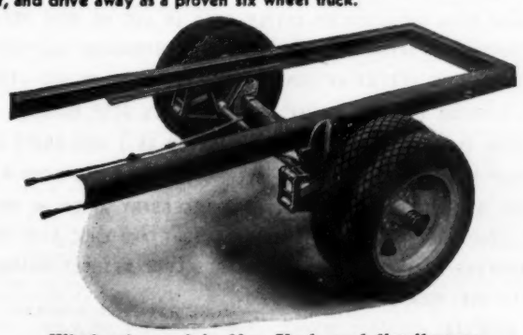

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Gulf Coast Wildcats

(Continued from Page 210)

Texas Co.'s No. 84 Hogg, 3,483 ft. N, 50 ft. W from SE cor. of lease, M. Varner Sur. Temporarily S.D. 5,242 ft.

BARBERS HILL—CHAMBERS COUNTY

Moody Corp.'s No. 1-C E. W. Barber, 302 ft. from N line and 312 ft. from E line of "B" lease, H. Griffith Sur.
Drlg. salt 2,922 ft.

Humble O. & R. Co.'s No. 7-B Kirby, 200 ft. W of No. 6 in Henry Griffith League.
Drlg. shale 4,923 ft.

Sun Oil Co.'s No. 6 Higgins, 302 ft. W of E line and 432 ft. N of S line of lease. T.D. 4,338 ft.; set 7-in. csg. at 4,263 ft.; I.P. 580 bbls. in 16 hrs.; tubing pressure 440 lbs.; csg. pressure 220 lbs.

Sun Oil Co.'s No. 10 Chambers, 50 ft. from N and W lines of lease.
Reaming; T.D. 3,658 ft.

Sun Oil Co.'s No. 17 Wilburn fee, 188 ft. E of W line and 40 ft. S of N line and 120 ft. W of No. 16.
Derrick.

Sun Oil Co.'s No. 22 J. Wilburn, midway between wells No. 17 and 21, or 150 ft. from each well.
Drlg. shale 3,786 ft.

Texas Gulf Prod. Co.'s No. 3 T. S. Fitzgerald, 340 ft. S of N line and 60 ft. E of W line of lease.
Drlg. rock 1,124 ft.

Texas Gulf Prod. Co.'s No. 2 Morgan Fitzgerald, 400 ft. N of S line, C of Strip No. 3.
Drlg. salt 1,952 ft.

Texas Co.'s No. 10 Wilburn, 475.8 ft. N, 29 deg., 10 ft. W from SW cor. of lease.
Drlg. sand 963 ft.

Yount Lee Oil Co.'s No. 15 Chambers county.
Coring sand 4,510 ft.

Texas Gulf Prod. Co.'s No. 3 O. W. Winfree, 505 ft. S of N line and 50 ft. W. Milling on csg. 5,593 ft.

Yount Lee Oil Co.'s No. 8 Woodward.
Drlg. shale 5,643 ft.

Yount Lee Oil Co.'s No. 27 Chambers Co., 400 ft. W of No. 24 and in line with Nos. 24 and 21.
Drlg. salt 1,690 ft.

Yount Lee Oil Co.'s No. 28 Chambers County, 50 ft. N of S line, direct offset to Sun's No. 10 Chambers County, Wm. Bloodgood Sur.
Derrick.

BOLING—FORT BEND COUNTY

Allied Minerals, Inc.'s No. 1 J. H. Blackwell, 1,400 ft. from E line, 100 ft. from S line of 50-ac. of J. H. Blackwell 100 ac., John Huff Sur.
S.D. for rig repairs 4,495 ft.

Midland Oil Co.'s No. 1 P. F. Coulter, 150 ft. from S line, 4,174 ft. from W line of 100-ac. tract, Miller League No. 2.
Set screen; T.D. 4,186 ft.

Allied Minerals, Inc.'s No. 1 E. C. Farmer, James Scott League, 750 ft. SE of NW line and 150 ft. SW of NE line of Gulf Prod. Co.'s E. C. Farmer 50-ac. tract.
Drlg. sticky shale 5,198 ft.

Irwin Larsen et al's No. 1 J. R. Farmer, 100 ft. NW and 100 ft. SW from E cor. of 125-ac. lease, James Scott Sur.
Location.

ORCHARD—FORT BEND COUNTY

Gulf Prod. Co.'s No. 41 Moore, 3,372 ft. S along W line from NW cor. of James Frazier Sur., and 2,154 ft. at R/A.
Drlg. sticky shale 5,194 ft.

HIGH ISLAND—GALVESTON COUNTY

Yount Lee Oil Co.'s No. 42 Cade, N. Fitzsimmons Sur., half way between Nos. 26 and 28 and 150 ft. E at R/A.
Drlg. sticky shale 5,960 ft.

Yount Lee's No. 41 Cade.
No report.

Yount Lee Oil Co.'s No. 44 Cade.
Derrick.

Yount Lee Oil Co.'s No. 10 Smith.
Drlg. 5,418 ft.

Yount Lee Oil Co.'s No. 23 Smith.
Derrick.

Yount Lee Oil Co.'s No. 2 Stewart.
Drlg. 3,010 ft.

DICKINSON—GALVESTON COUNTY

Humble O. & R. Co.'s No. 1 A. F. Danielson, center of 10-ac. tract, being Lots 6 and 7 of Righter Subd., John Sellers Sur.
Drlg. clay 200 ft.

ARRIOLA—HARDIN COUNTY

Houston Oil Co.'s No. 4-X Arriola fee, 400 ft. E of No. 3-X.
T.A. 5,290 ft.

Houston Oil Co.'s No. 3-X fee, 2,150 ft. S of N line of lease and 150 ft. E of W line of Unit X.
Moving into W.O.

BATSON—HARDIN COUNTY

J. H. Burt et al's No. 1 Jordan, 300 ft. E and 100 ft. S of No. 1, Mary Hooks Sur.
Drlg. shale 3,515 ft.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 9 N. Jordit, 200 ft. due W of No. 9 R. Jordit.
Drlg. gumbo 80 ft.

Mines Bros.' No. 1 Coswell.
T.D. 3,321 ft.; I.P. 27 bbls.

SOUR LAKE—HARDIN COUNTY

Alpha Pet. Co.'s No. 2-A Wm. Weiss, 100 ft. W of No. 2.
Drlg. 4,300 ft.

Sun Oil Co.'s No. 2 Bernard Corp., 150 ft. from N and W lines of Lot 11, H.T.&B. Sur., Sec. 69.
T.D. 7,400 ft.; reaming 7,335 ft.

Texas Co.'s No. 315 fee, 200 ft. E at R/A to point midway between Nos. 312 and 313.
Drlg. shale and boulders 1,411 ft.

GOOSE CREEK—HARRIS COUNTY

Derring's No. 1 Williams, 180 ft. from SE cor. and 55 ft. NE of Hybush's No. 3, in W. Scott upper league.
Cellar.

Humble O. & R. Co.'s No. 80 Simms-Smith, Scott Lower League, 1,000 ft. E of the most westerly W line, and 300 ft. N of the most northerly S line.
Reaming shale and lime 6,801 ft.

PIERCE JUNCTION—HARRIS COUNTY

Gulf Prod. Co.'s No. 1 Taylor.
Drlg. shale and sand 4,650 ft.

Gulf Prod. Co.'s No. 10 H. C. Cain, 399 ft. S and 290 ft. E of NW cor. of lease and 217 ft. N of No. 9, J. Hamilton Sur. No. 879 (workover).
T.D. 4,086 ft.; I.P. 60 bbls. of oil and 60 bbls. of wtr.; comp.

Rio Bravo Oil Co.'s No. 27-A Settegast, 377 ft. S, 553 ft. W of NE cor. of Settegast "A" tract, James Hamilton Sur.
Drlg. shale 5,064 ft.

Rio Bravo Oil Corp.'s No. 9-A Settegast, 1,575 ft. N line, 350 ft. E line NE cor. "A" lease, J. A. Kopman Sur.
Drlg. soft shale 5,316 ft.

MYKAWA—HARRIS COUNTY

West Prod. Co.'s No. 1 Diamond, Blk. 12, F. J. Rothas Sur.
Swabbing 4,444 ft.

Danciger O. & R. Co.'s No. 1 Williams, SW cor. of 29-ac. lease.
Coring shale 4,790 ft.

West Prod. Co.'s No. 1 Lobit, C of Lot 17, Erin Gardens Subd., F. J. Rothas Sur
Drlg. shale 6,210 ft.

TOMBALL—HARRIS COUNTY

Humble O. & R. Co.'s No. 1 Hilderith, 466 ft. at R/A S from N line, 466 ft. at R/A from W line of 86-ac. tract, J. House Sur.
Coring sand 5,554 ft.

Humble O. & R. Co.'s No. 3-A Kobs.
Drlg. shale 4,119 ft.

Humble O. & R. Co.'s No. 3 Petrick, 316 ft. E of W line, 950 ft. S of N line of 165.06-ac. tract, J. Hooper Sur.
Coring sand 5,568 ft.

Humble O. & R. Co.'s No. 5 B. Quilter, 466 ft. E of W line, A. Senchel Sur.
Set 7-in. csg. at 5,547 ft.; washing in at 5,554 ft.

Humble O. & R. Co.'s No. 2 Rudel, 2,498 ft. N of S line, 727 ft. W of E line and 727.6 ft. E of W line, James House Sur.
T.D. 5,597 ft.; set 7-in. csg. 5,591 ft.; W.O.C.

Texas Co.'s No. 4 W. B. Scherer, 2,731 ft. W of SE cor. of lease, Joseph House Sur.
Drlg. shale and lime 4,094 ft.

KITTRELL—HOUSTON AND WALKER COUNTIES

Humble O. & R. Co.'s No. 2 Shaw, Charles McEllis Sur.
Tested 1 bbl. per hr.; T.D. 1,990 ft.

Humble O. & R. Co.'s No. 2 Texas Long Leaf Lbr. Co., 330 ft. SW of NE line, 660 ft. SE of No. 3, Chas. McEllis Sur., Abst. 382.
Location.

Humble O. & R. Co.'s No. 3 Texas Long Leaf Lbr. Co., 130 ft. SE of NW line, 330 ft. SW of NE line, and 660 ft. NW of No. 2, Chas. McEllis Sur.
Location.

Humble O. & R. Co.'s No. 4 Shaw, 990 ft. NW from SE line, 990 ft. SW of NE line of C. McEllis Sur.
Drlg. 2,007 ft.

Humble O. & R. Co.'s No. 5 Shaw, 990 ft. N and 330 ft. E of SW cor. of the Shaw 100-ac. tract in Charles McEllis Sur.
Location.

W. A. Kells' No. 1 L. W. Huffman, center of Huffman tract, C. McEllis Sur.
Location.

VANDERBILT—JACKSON COUNTY

Imperator Oil Co.'s No. 1 Dutton, S C of Lot No. 11, Blk. 25, 450 ft. S of R.R. and 1,350 ft. W line of townsite, Ray Musquiz Sur.
Rigged up and S.D.

Turman Oil Co.'s No. 1 T. H. Miller, 150 ft. each way out of E 50 ac. of Miller 100-ac. tract in Ray Musquiz Sur.
Rigging up.

BIG HILL—JEFFERSON COUNTY

Yount Lee Oil Co.'s No. 1-A Pipkin, 2,640 ft. S and 2,050 ft. W of NE cor. of survey.
Drlg. shale 5,050 ft.

FANNETT—JEFFERSON COUNTY

Gulf Prod. Co.'s No. 15 Thomas, 200 ft. W of Gulf's No. 7 Burrell.
Abd.; T.D. 6,769 ft.

CLEVELAND—LIBERTY COUNTY

Blackgold Pet. Co.'s No. 1 R. D. McDonald, 30 ft. due W of Gulf Prod. Co.'s 6-C Kirby, T. Devers Sur.
Rig up.

William J. Colegrove et al's No. 1 State School Land & Dev. Co., 446 ft. from W line and 170 ft. from S line of survey, Clayton Rooper Sur.
Location.

Gulf Prod. Co.'s No. 7 Kirby, 1,100 ft. N of No. 6-C Kirby.
Prepare for D.S. test; T.D. 5,845 ft.

ESPERSON—LIBERTY COUNTY

General Crude Oil Co.'s No. 15 Moores Bluff, midway between No. 10 and No. 12 Moores Bluff.
Drlg. shale 1,895 ft.

General Crude Oil Co.'s No. 9 Davis, 1,300 ft. each way from S and E lines of lease in D. Kokernut Sur.
Drlg. hard shale 5,671 ft.

General Crude Oil Co.'s No. 1 W. D. Kay, Malcolm Duncan Sur., 1,537 ft. along N
Drlg. hard sand and lime 5,251 ft.

HANKAMER—LIBERTY COUNTY

Gulf Prod. Co.'s No. 1 Boyette, offset to No. 1 Ezzel.
Rig up.

Gulf Prod. Co.'s No. 3 Crow & Jacobs, 300 ft. each way out of SW cor. of survey.
Drlg. sandy shale 5,762 ft.

HULL—LIBERTY COUNTY

Gulf Prod. Co.'s No. 12 W. L. Thomas, 1,650 ft. N and 150 ft. E of SE cor. of 300-ac. tract, Jessie Devore Sur.
Drlg. sandy shale 5,536 ft.

G. R. Brown and S. F. Bashara's No. 1 David Hannah, Jesse Devore league, 200 ft. S line, 150 ft. E line, 42-ac. Gulf tract.
Derrick.

Sterling O. & R. Co.'s No. 1 Taylor, 180 ft. S of S line of tract, and 5,500 ft. E of E line of 5-ac. tract, J. Devore Sur.
Drlg. shale 3,149 ft.

Texas Co.'s No. 3 Barrow.
Rig up.

BUCKEYE—MATAGORDA COUNTY

United North & South Dev. Co.'s No. 1 Unit 4, Buckeye farm, J. C. Keller league, 214 ft. N line and 202 ft. E line of lease.
No report.

CONROE—MONTGOMERY COUNTY

A. A. Cameron's No. 1 Dudley, 466 ft. S line, 350 ft. W line of lease, C. Sewart Sur.
Drlg. 3,500 ft.

Alpha Pet. Co.'s No. 3 Falvez, 466 ft. from N line and offsets to Sun Oil Co.'s No. 20 Keystone Mills.
T.D. 5,078 ft.; comp.; no gauge.

Humble O. & R. Co.'s No. 72 South Texas Development Co., 969 ft. W of E line, 700 ft. S of N line, T. C. Howell Sur.
Drlg. shale 3,056 ft.

Houston Oil Co.'s No. 11 Cartwright, N offset to No. 10 Cartwright.
Location.

SPLENDORA—MONTGOMERY COUNTY

Bryce McCandless et al's No. 1 Texas Long Leaf Lbr. Co., 330 ft. from N and E lines of the W½ of Blk. No. 8, Walker County School Land Sur.
No report.

ORANGE—ORANGE COUNTY

Trio Oil Co.'s No. 1 D. S. Comier, 69 ft. W of E line and 39 ft. S of N line of 6.83-ac. tract in W. M. Dyson Sur.
S.D. 1,792 ft.

PORT NECHES—ORANGE COUNTY

Port Neches Pet. Corp. et al's No. 1 W. B. Organ, 450 ft. from NE line and 150 ft. from NW line of A. Schramm Sur., S of Port Neches Field.
Rig up.

Texas Co.'s No. 3-B Polk, 200 ft. S, 450 ft. W of SE cor. of Mary E. Hall Sur. No. 3.
Drlg. sand rock 1,450 ft.

C. J. SIPPLE & CO.
Winchester, Kentucky

Oct. 23, 1934

Messrs. C. L. & W. W. Auer,
Corry, Penna.

Gentlemen:

I have used all kinds of cups, but your SEEP CUPS have them all beat . . . . .

Yours very truly,
L. D. Sipple, Supt.

Why SEEP CUPS Make Friends

Only the toughest part of the extra-quality hides we personally select at the tannery goes into SEEP CUPS. This quality is maintained throughout manufacture by painstaking hand workmanship and rigid inspection. Thus, SEEP CUPS set the service and quality standards by which all other cups are judged.

You Will Reduce Shutdown Worry and Expense If You Ask for SEEP CUPS at Your Supply Store.

C. L. & W. W. AUER

CORRY PENNA.

K30 176 EXPED=LITTLEAMERICA VIA SANFRANCISCO CALIF NOV 25 NFT
W G GREEN=
SSC TULSAOKLA (VIA MACKAY RADIO)=

SEISMIC WORK GOING NICELY NOW CAN USE MAN TO GOOD ADVANTAGE ANY EQUIPMENT HE CARES TO BRING FOR EXPERIMENTAL WORK ON ICE SNOW AND WATER TRANSMISSION WOULD BE FINE STOP CONDITIONS VERY PECULIAR SOME SOUNDS TRANSMITTED MUCH BETTER THAN OTHERS YOU CAN HEAR SOUND CAUSED BY STRIKING SNOW WITH SHOVEL TWICE AS FAR AS HALF POUND CHARGE BURIED TWO FEET STOP CAN GET REFLECTIONS FROM BOTTOM BARRIER ICE BY STRIKING SNOW WITH HAND ALTHOUGH BEST OBTAINED BY TRIPLE ECHO IN ICE AS WAVE REFLECTED FROM BOTTOM OF WATER STRIKES ICE STOP SUSPENDING GEOPHONES TO ELIMINATE SOME EFFECT OF HORIZONTAL VIBRATION IN ICE STOP TRACE SHOWS ECHOING IN WATER THREE OR MORE TIMES STOP HOPE TO PUT TWO CREWS OUT WITH SSC EQUIPMENT AS SOON AS I CAN TRAIN CREWS AND KEEP IT GOING CONTINUALLY STOP WILL HAVE SOME GOOD PICTURES FOR YOU STOP NO PERSONAL EQUIPMENT NECESSARY AFTER HE REACHES BOAT STOP WHATS MANS NAME HEIGHT WEIGHT AND SHOE SIZE STOP ENDEAVORING ARRANGE FOR YOUR MESSAGES COME WITHOUT CHARGE AND WISH TO USE YOUR COUNCIL REGARDS=
POULTER.

Seismograph Service Corporation

Texas Co.'s No. 10 Kuhn, 200 ft. N, 450 ft. W of SE cor. of Mary E. Hall Sur. No. 2. Drlg. shale 2,675 ft.
Texas Co.'s No. 6 Kuhn, 150 ft. E, 150 ft. N of SE cor. of Mary Hall Sur. 7-in. csg. 5,399 ft.; T.D. 5,479 ft.

LIVINGSTON—POLK COUNTY

Gem Oil Co.'s No. 6 Davis & Holmes, 652 ft. from W and 662 ft. from N line of survey, A. Viesca Sur. Location. Block E.
T. D. Humphries' No. 1 J. C. Whitforth, Derrick.
Sun Oil Co.'s No. 2 H. J. Pratt, 330 ft. from N and E lines of Pratt 195-acre lease, A. Viesca Sur. Drlg. rock 2,110 ft.
B. M. York's No. 2 Kingsbury County Holding Corp., Tract 19, A. Viesca Sur., 150 ft. N of No. 1. Derrick.

GRETA—REFUGIO COUNTY

Atlantic and Stanolind's No. 7-G O'Brien. Derrick.
Hewitt & Daugherty's No. 12 Lambert. Rig up.
Humble O. & R. Co.'s No. 11 Fannie Heard. T.D. 4,385 ft.; I.P. 200 bbls.; 3/16-in. choke.
Humble O. & R. Co.'s No. 16 J. F. B. Heard. Set 7-in. csg. at 4,376 ft.; comp.; no gauge.
United Prod. Co.'s No. 10 Fannie Heard, SE cor. of lease; workover. Perforating 3,443 ft.
United Prod. Co.'s No. 15 M. F. Lambert, C of S½ of Blk. 15 of M. F. Lambert Subd. T.D. 3,517 ft.; comp.; no gauge; 400 lbs. csg. pressure; 100 lbs. tubing pressure; ½-in. choke; I.P. 250 bbls. per day.

REFUGIO—REFUGIO COUNTY

Houston Oil Co.'s No. 18 P. H. Rooke, 486 ft. SW of NE line, and 352 ft. W of E line. Building derrick.
Houston Oil Co.'s No. 18 W. J. J. Heard, S offset to United Prod. Co.'s well on N side of river. Drlg. shale 4,100 ft.
Houston Oil Co.'s No. 17 Rooke (200-ac. tract), S offset to No. 17 P. H. Rooke. Set 7-in. csg. at 4,919 ft.; W.O.C.
United Prod. Co.'s No. 9 Wilson Heard, 2,414 ft. SE along NE property line of Wilson Heard 250-ac. tract, thence at R/A 300 ft. to point of location. W.O.C. 4,937 ft.; 7-in. at 4,931 ft.
United Prod. Co.'s No. 2 Powers (old well). Drilled plugs 5,410 ft.; preparing to perforate.

COLETO CREEK—VICTORIA COUNTY

Rupert Cox's No. 1 Antone Trybil, R. Manchola Sur. Derrick.
Plummer Oil Co.'s No. 2 Zimmer, W offset to Notex Oil Co.'s No. 2 Zimmer. Cmtd. csg.; T.D. 2,780 ft.
Albert Plummer's No. 1 Zimmer, 330 ft. NE and SE lines of lease in Manchola Sur. S.D. 5,200 ft.
Plummer Oil Co.'s No. 3 Zimmer, 660 gt. NE of No. 2. Location.

McFADDIN-O'CONNOR DISTRICTS—VICTORIA AND REFUGIO COUNTIES

Texas Co.'s No. 9 McFaddin. Location.

SAN FELIPE—WALLER COUNTY

Seaport Oil Co.'s No. 1 J. W. Avery, 330 ft. from E line, 330 ft. from N line of NE cor. of 29-ac. tract, John McFarland Sur. T.D. 2,975 ft.; prepare to test.
Texas Co.'s No. 1 J. H. Jones, 330 ft. each way from N line and NW lines of lease, Wm. Cooper Sur. 13⅜-in. csg. 950 ft.

CLAY CREEK—WASHINGTON COUNTY

Sun Oil Co.'s No. 10 H. R. Clay. 10¾-in. csg. set 158 ft.; drlg. 261 ft.
Sun Oil Co.'s No. 5 J. W. Hunt. S.D. 1,663 ft.

LOUISE—WHARTON COUNTY

Pure Oil Co.'s No. 3 Charles T. Kountze, 1,980 ft. SE and 330 ft. SW of N cor. of Morris & Cumming Sur., Sec. 9. Drlg. hard lime 3,611 ft.
Pure Oil Co.'s No. 1 John Macha, 318 ft. from NW line and from SE line of F. Walnut Sur., and 467 ft. from NE line of 101.53-ac. lease, M.&C. Sur. No. 25. Location.
Pure Oil Co.'s No. 1 G. Wharton Est., 1,497 ft. from SW line and 318 ft. from SE line of F. Walnut Sur., Abst. A-35. Drlg. hard shale and shells 3,448 ft.
Pure Oil Co.'s No. 2 Stewart, Morris & Cummings Sur., Sec. 25, 990 ft. out of SW cor. of 160 acres. T.D. 8,271 ft.; P.B. to 6,422 ft.

SOUTH LOUISIANA FIELDS
BLACK BAYOU—CAMERON PARISH

Shell Pet. Corp.'s No. 2 State. Cmtd. surface csg.
Shell Pet. Corp.'s No. 1 A. Watkins, 970 ft. S, 1,990 ft. E of NW cor. of Sec. 17-12s-12w. Rig up.
Shell Pet. Corp.'s No. 3 State. Coring shale 6,777 ft.
Shell Pet. Corp.'s No. 20 Watkins, 1,611 ft. S and 216 ft. W of NE cor. Sec. 18-2s-12w. T.D. 4,034 ft.; R.U. to pump.

BOSCO—ACADIA AND ST. LANDRY PARISHES

Superior Oil Prod. Co.'s No. 1 E. Comeauy ("A" lease), 330 ft. S, 89 deg. 3 min. E, and 350 ft. S, 30 deg. 21 min. W, of SW cor. N½ NE Sec. 35-8s-3e. Rig up.
Superior Oil Prod. Co.'s No. 3 Comeaux, 1,324 ft. E of NW cor. NE Sec. 34. Derrick.
Superior Oil Prod. Co.'s No. 1 Herbert, 2,095 ft. S and 2,058 ft. E of NW cor. Sec. 35-8s-3e. 7-in. csg. 3,695 ft.
Superior Oil Prod. Co.'s No. 5 Larcade, 1,665 ft. S and 483 ft. E of NW cor. Sec. 35-8s-3e. Derrick.
Superior Oil Prod. Co.'s No. 1 B. Iseringhauser, 330 ft. S and 2,546 ft. W of SE cor. Sec. 27-8s-3e. Derrick.
Superior Oil Prod. Co.'s No. 3 Iseringhauser, 1,817 ft. E, 330 ft. N of SW cor. Sec. 27. T.D. 7,851 ft.; set 9⅝-in. csg. at 7,843 ft.; comp.; no gauge.
Superior Oil Prod. Co.'s No. 1 Malancon, 375 ft. S and 63 ft. E of NW cor. SW Sec. 34-8s-3e. T.D. 8,620 ft.; set 7-in. at 8,573 ft.
Superior Oil Co.'s No. 2 Larcade, 502 ft. N and 1,197 ft. E, SW cor. Sec. 26-8s-3e. I.P. 506 bbls. in 24 hrs.; tubing pressure 1,350 lbs.; T.D. 8,692 ft.
Superior Oil Prod. Co.'s No. 1 Prejan, 324 ft. N, 330 ft. E of SW cor. NE Sec. 34. Drlg. shale 6,480 ft.
Superior Oil Prod. Co.'s No. 1 Lucien Lavergne, 596 ft. E and 330 ft. N of SW cor. of Sec. 27-8s-3e. T.D. 8,714 ft.; set 7-in. csg. at 8,696 ft.; W.O.C.
Superior Oil Prod. Co.'s No. 1 Moise LaVergne, 269.7 ft. W and 98 ft. N of SE cor. of Sec. 28-8s-3e. Drlg. sandy shale 7,723 ft.
Superior Oil Prod. Co.'s No. 1 Trahan, 1,392 ft. N, 543 ft. W of SE cor. Sec. 27. 7-in. csg. 6,481 ft.; T.D. 6,486 ft.
Superior Oil Co.'s No. 1 A. Martinez, 2,510.6 ft. S and 1,057.2 ft. W of NE cor. of Sec. 35-8s-3e. Coring shale 9,675 ft.

EDGERLY—CALCASIEU PARISH

Emerson Oil Co.'s No. 1 Paraffine Oil Co., 945 ft. N and 50 ft. E of SW cor. NE NE Sec. 28-9s-11w. Rig up.
Union Sulphur Oil Co.'s No. 3 Hunter, 1,160 ft. N and 320 ft. E of SW cor. SE Sec. 21-9s-11w. Derrick.

CAMERON MEADOWS—CAMERON PAR.

Burton-Sutton's No. 1 School Land. Drlg. shale 4,535 ft.
Burton-Sutton Oil Co.'s No. 4 School Land, 2,891 ft. W and 150 ft. N of SE cor. of Sec. 16-4s13w. Derrick.
Magnolia Pet. Co.'s No. 9 Cameron Meadows, 2,266 ft. N and 526 ft. S of NE cor. Sec. 21-14s-13w. Cmtd. csg.; T.D. 1,224 ft.
Texas Co.'s No. 1 Miami Corp. T.D. 8,458 ft.; sidetracked at 7,350 ft.

CHOCTAW DOME—IBERVILLE PARISH

Standard Oil Co.'s No. 5 Gay, 2,450 ft. S and 425 ft. E of NW cor. of NE Sec. 32-9s-11e. Rig up.

DOG LAKE—TERREBONNE PARISH

Texas Co.'s No. 11 State, 150 ft. N and 2,474 ft. W, SE cor. Sec. 31-21s-16e. Derrick.
Texas Co.'s No. 15 State, 2,602 ft. N and 1,308 ft. W, SE cor. Sec. 31-21s-16e. Abd. 5,233 ft.

GUEYDAN—VERMILLION PARISH

Pure Oil Co.'s No. 6, Alliance Trust, 667 ft. E, 1,787 ft. S line of lease, Sec. 34-11s-1w. Prepare to sidetrack 6,190 ft.; T.D. 9,370 ft.

HACKBERRY—CAMERON PARISH

Calcasieu Oil Co.'s No. 3 H. C. Hanzen, 150 ft. S and 150 ft. E of NW cor. of lease. Sec. 13-12s-10w. Drlg. 3,261 ft.
Gulf Prod. Co.'s No. 16 Irwin, 770 ft. from N line, 800 ft. from W line of SE cor. Sec. 12-12w-10s. Drlg. sandy shale 6,659 ft.
Sutton Oil Co.'s No. 1 Miller, 229 ft. N and 100 ft. E of SW Sec. 23-12s-10w. Drlg. gumbo 39 ft.
Texas Co.'s No. 13-B State, 400 ft. N of NE cor. of lease, Sec. 13-12s-10w. Coring sand 6,252 ft.
Texas Co.'s No. 14 State, 500 ft. SE of No. 13, Sec. 13-12s-10w. Location.
Union Sulphur Co.'s No. 4 Humble, 710 ft. N and 330 ft. W of SE cor. Sec. 11-12s-10w. Running csg.; T.D. 6,016 ft.
Yount Lee Oil Co.'s No. 1-A Gulf Land, 2,000 ft. S and 50 ft. E of the NW cor of Sec. 22-12-10. Rig up.
Yount Lee Oil Co.'s No. 4 Carter, 160 ft. S, 305 ft. W of NE cor. of 30-ac. lease, Sec. 22-12s-10w. Drlg. shale 3,306 ft.
Yount Lee Oil Co.'s No. 12 Gulf Land, 1,625 ft. S and 350 ft. W of NE cor. of NW of Sec. 14-12s-10w. Rig up.
Yount Lee Oil Co.'s No. 2-A Gulf Land, 1,100 ft. S and 50 ft. E of the NW cor of Sec. 21-12-10. Rig up.

NEW IBERIA—IBERIA PARISH

I. Delcambre's No. 1 Viatar, 150 ft. E, 150 ft. S and 150 ft. W of SE cor. of tract, Sec. 41-12s-5e. S.D. 3,006 ft.
Harrison & Abercrombie's No. 2 Schwing, beginning at E cor. of Sec. 24-12s-5w, thence southwesterly along section line 3,054 ft., thence NW at R/A 1,121 ft. Drlg. shale 3,708 ft.
Texas Co.'s No. 1 Hanzen, NE along NW line of lease 508 ft., thence 150 ft. E at R/A, Sec. 54-12s-7e. Drlg. sand and gravel 691 ft.

IOWA—CALCASIEU AND JEFF DAVIS

Magnolia Pet. Co.'s No. 11 Walt, 330 ft. E, 330 ft. N of SW cor. NE SE Sec. 12. 13⅜-in. csg. 1,423 ft.; T.D. 1,424 ft.
Magnolia Pet. Co.'s No. 4 Willett. Coring shale 7,003 ft.
Shell Pet. Corp.'s No. 12 Hyde, 330 ft. W, 330 ft. S of NE cor. NW Sec. 13-9s-7w. Drlg. shale 6,270 ft.
Shell Pet. Corp.'s No. 11 Hyde, 330 ft. E and S of NW cor. NE Sec. 13-9s-7w. Coring oil sand 6,920 ft.
Shell Pet. Corp.'s No. 10 Hyde. Running 7-in. csg.; T.D. 6,940 ft.
Shell Pet. Corp.'s No. 3 Tuten, 1,159 ft. W and 330 ft. from E of NE cor. SE Sec. 13-9s-6w. T.D. 6,649 ft.; P.B. to 6,615 ft.

JENNINGS—ACADIA PARISH

Simon-Tolson and Gardner's No. 1, 1,020 ft. due E and 250 ft. due W of SE cor. Sec. 46-9s-2w. S.D. 1,250 ft.
Yount Lee Oil Co.'s No. 14 Housierre-Latrielle, 260 ft. N of No. 13, Sec. 47-9s-2w. Drlg. shale 7,356 ft.

LAKE BARRE—TERREBONNE PARISH

Texas Co.'s No. 12 L.L.&E. Drlg. sandy shale 3,865 ft.

LAKE HERMITAGE—PLAQUEMINES PARISH

Humble O. & R. Co.'s No. 2 LaFourche, Basin Levee Dist. T.D. 6,472 ft.; plugged with cmt. from 3,300 ft. to 3,600 ft.

LAKE PELTO—TERREBONNE PARISH

Whitstone O. & G. Co.'s No. 1 Buckley, 300 ft. S and E of NW cor. SW SW Sec. 35-19s-16e. S.D. 3,260 ft.

LAKE WASHINGTON—PLAQUEMINES PARISH

Humble O. & R. Co.'s No. 23 Cockrell-Moran, 650 ft. N and 21 deg. 30 min. E of No. 2 in Twp. 20s-26e. T.D. 4,337 ft.; swbng.; 2,800 ft. of fluid in hole.

LEESVILLE—LAFOURCHE PARISH

Gulf Prod. Co.'s No. 2 Allen. Drlg. sand 3,808 ft.
Gulf Prod. Co.'s No. 5 Allen. Derrick.
Gulf Prod. Co.'s No. 10 Bernard, 1,833 ft. E, 958 ft. S of NW cor. Sec. 26-21s-22e. Derrick.
Gulf Prod. Co.'s No. 2 Community, 50 ft. W and 1,300 ft. E of NW cor. Sec. 26-21s-22e. Drlg. wtr. sand 2,330 ft.
Emerald Pet. Co.'s No. 10 State, west bank, 300 ft. S of well No. 1. Location.
Emerald Pet. Co.'s No. 11 State, east bank, 227 ft. N of well No. 1. Location.
Emerald Pet. Co.'s No. 12 State, east bank, 250 ft. S of well No. 1. Location.
Leesville Oil & Gas Co.'s No. 1 Southern Louisiana Canal Navigation Co., 35 ft. W of Bank of Bayou, 15 ft. N of S bank, Sec. 26-21s-22e. T.D. 4,189 ft.; P.B. to 1,460 ft.; waiting on cmt. to set.
Texas Co.'s No. 21 L.L.&E., Sec. 26-21s-22e. T.D. 4,925 ft.; P.B. to 3,555 ft. and sidetracked; cmtd. csg. 3,700 ft.; pumping 100 bbls. per day.
Texas Co.'s No. 28 L.L.&E. 4½-in. csg. 3,964 ft.; T.D. 3,916 ft.

LOCKPORT—CALCASIEU PARISH

Magnolia Pet. Co.'s No. 12 Bordages, 966 ft. W and 93 ft. N of SE cor. N½ NE Sec. 8-10s-19w. Drlg. 6,781 ft.
Union Sulphur Co.'s No. 1 Moss (W.O.). Drlg. shale 5,787 ft.

PORT BARRE—ST. LANDRY PARISH

Gulf Prod. Co.'s No. 9 Wilson Cochran, Sec. 26s-22s-1e. Drlg. sand 1,492 ft.

ROANOKE—JEFFERSON DAVIS PARISH

Humble O. & R. Co.'s No. 1 Taylor, 440 ft. E and 440 ft. S of NW cor. SW Sec. 12-9s-4w. Drlg. shale 7,933 ft.
Humble O. & R. Co.'s No. 1 R. C. Jarnegan, 440 ft. S, 440 ft. E of the NW cor. SE Sec. 12-9s-4w. Coring shale 7,845 ft.
Humble O. & R. Co.'s No. 2 Devilbiss, 1,399 ft. W, 466 ft. S of NE cor. Sec. 14-9s-4w. Coring shale 9,570 ft.
Shell Pet. Corp.'s No. 1 Jarnigan, 330 ft. E, 660 ft. S, NW cor. Sec. 12-9s-4w. T.D. 9,490 ft.
Shell Pet. Corp.'s No. 1 Carter, 660 ft. N and 330 ft. W of SE cor. NW Sec. 1-9s-4w. Drlg. sand 3,234 ft.
Shell Pet. Corp.'s No. 2 Kratzer, 440 ft. N and 440 ft. E of SW cor. NW Sec. 12-9s-4w. Drlg. sandy shale 1,555 ft.

SORRENTO—ASCENSION PARISH

Union Sulphur Co.'s No. 26 United Land. S.D. 5,922 ft.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 2 Noble, E of No. 1. Drlg. rock 1,990 ft.
Union Sulphur Co.'s No. 790 fee, 929 ft. S and 802 ft. W of C Sec. 29-9s-10w. Drlg. sandy shale 5,214 ft.
Union Sulphur's No. 2 Uldrick, 500 ft. N of No. 1. Drlg. hard sandy shale 5,605 ft.
Union Sulphur Co.'s No. 3 Kelly, 1,345 ft. S, 198 ft. W of the NE cor. of Sec. 30-9s-10w. S.D. 5,132 ft.

WHITE CASTLE—IBERVILLE PARISH

Shell Pet. Corp.'s No. 9 Wilburn, 300 ft. E of No. 7. Drlg. shale 5,493 ft.

MISCELLANEOUS WILDCATS
TEXAS
AUSTIN COUNTY

Quintana Oil Co.'s No. 1 L. S. Hillboldt, M. N. Allen League. Drlg. sandy shale 4,560 ft.

BRAZORIA COUNTY

Amerada Pet. Corp.'s No. 1 Houston Farm Dev. Co., 1,414 ft. N, 316 ft. W of SE cor. of L. Bachelder Sur. Surveying hole; T.D. 7,667 ft.
C.&R.G. Drlg. Co.'s No. 1 Frank Truksa, 200 ft. from S and 1,000 ft. from E lines of 75-ac. tract, Sec. 7, H.T.&B.R.R. Sur. S.D. 7,890 ft.
Holt et al's No. 1 Griffith, J. B. Bailey Sur. T.D. 4,200 ft.; waiting orders.
Stanolind Oil & Gas Co.'s No. 1 J. W. Surface, 466 ft. N and 400 ft. W of most easterly SE cor. of 75.9-acre tract, A.C.H. &B. Sur., Abst. 462. T.D. 5,990 ft.; drlg. plug.

CALHOUN COUNTY

Continental Oil Co.'s No. 1 American Nat. Realty Co., C of NE of Sec. 6, Blk. C. Preparing to work over.

CHAMBERS COUNTY

Humble O. & R. Co.'s No. 1 Middleton, 466 ft. each way out of the SW cor. of survey. Drlg. shale 2,340 ft.
Sun Oil Co.'s No. 1 Hamilton, 1,400 ft. from N line, 1,400 ft. from W line of survey, T.&N.O. Sur., Sec. 128. Reaming; T.D. 6,527 ft.

COLORADO COUNTY

Danciger O. & R. Co. and L. E. Hultz's No. 1 C. L. Raver, 990 ft. N and E of SW cor. 477 acres, Sec. 1, B.B.B.&C. Sur. T.D. 4,590 ft.; R.U. to D.D

FORT BEND COUNTY

Benedum & Trees' No. 1 Jacob Hensler, Charles D. Sayers Sur. S.D. 6,500 ft.
W. A. Shafer et al's No. 1 V. B. Bortash, 693 ft. SW of NE line and 1,003 ft. NW of SE line of Sec. 52, H.&T.C. Sur. S.D. 2,900 ft.

GALVESTON COUNTY

Gillock Pet. Co.'s No. 2 Maco Stewart, 900 ft. N and 150 ft. W of No. 1, Alex Farmer Sur. T.D. 1,500 ft.; waiting on surface pipe; S.D.
H. E. Sedberry, trustee's No. 1 Thomas Shaw (200 acres), 150 ft. NW line, 165 ft. NE line, Lot 66, Sec. 7, Hall & Jones, Galveston Island. 10¾-in. csg. at 1,279 ft.; T.D. 1,330 ft.

GRIMES COUNTY

Hubert Holt et al's No. 1 Simon Fuqua, 1,200 ft. N of S line and 400 ft. W of E line of 177-ac. lease and survey, Moses Evans Sur. S.D. 3,080 ft.
Dr. Marshall et al's No. 1-B Todd, 300 ft. from E line and 175 ft. from N line of 150-ac. tract in extreme NW cor. of county (25 ft. N of No. 1). S.D. 2,005 ft.
Roan et al's No. 1 S. W. Sealy, 3,474 ft. N of S line and 850 ft. E of W line of survey, B. F. Smith Sur., 2 miles SW of Kellum Springs. Rig up.

HARRIS COUNTY

American Liberty Oil Co.'s No. 1 M. M. Graves, 1,402 ft. N of S line and 467 ft. E of W line of J. W. Bryan Sur. Drlg. shale 2,190 ft.
Esco Oil Co.'s No. 1 E. P. Seureau, 3,232 ft. from W line and 2,215 ft. from S line of 350-ac. tract, W. P. Harris Sur., Abst. A-30. Drlg. shale 1,725 ft.
Goldston et al's No. 1 Weingarten, 467 ft. out of NE cor. of H.&T.C. Sur., Sec. 39. Rig up.
T. S. F. Oil Co.'s No. 1 J. B. Hine, Arthur McCormick Sur., Abst. 46. 12½-in. csg. at 320 ft.; T.D. 450 ft.
C. C. Foster et al's No. 1 H. K. Johnson, 2,000 ft. from S line and C of E and W lines of G.C.&S.F. Sur. Drilled 25 ft. and S.D.
W. U. Paul's No. 1 E. M. House, 2,200 ft. N and 1,000 ft. E of NE cor. of E. Benson Sur. in M. Magruder Sur. Washing over stuck D.S.; T.D. 7,320 ft.

HOUSTON COUNTY

Gem Oil Co.'s No. 1 A. B. Buffington et al, 1,000 ft. from N and 1,200 ft. from most easterly W line of 165.9-ac. tract, J. M. Prado Sur. S.D. 1,680 ft.

JACKSON COUNTY

Atkins & O'Neil's No. 1 Hodges, C Sec. 22. Blk. 1, I.&G.N. Sur. Drlg. shale 5,588 ft.

JEFFERSON COUNTY

Navarro Oil Co.'s No. 1 Talliver, 1,570 ft. from N line and 870 ft. from W line of Shadric Morris Sur. Drlg. shale 3,320 ft.
Sun Oil Co.'s No. 1 H. Long, 1,500 ft. E line, 990 ft. E line of lease. Coring shale 8,844 ft.
Sun Oil Co.'s No. 1 Hebert & Braussard, 6,890 ft. NW along SW line and 660 ft. NE at right angles to SW line, B. Blackman Sur., Abst. No. 2. Rig up.

LAVACA COUNTY

L. A. Douglas' No. 1 Matt Pustka, 330 ft. S and W lines of 139-ac. tract in Moses Mitchell Sur. Set 10-in. csg. 150 ft.
Humble O. & R. Co.'s No. 1 C. S. Wilson, 330 ft. out of SW cor. of Crenshaw Sur. Drlg. shale 6,007 ft.

LIBERTY COUNTY

R. M. Bruner et al's No. 1 N. Bell, 150 ft. from N line and 150 ft. from W line of Bell's 187-ac. tract, H.&T.B. Sur. No. 4. Rigging up.
Extension Oil Co.'s No. 1 J. A. Lovett, 280 ft. from E and 600 ft. from S line of lease, P. P. Deevers Sur. Coring shale 3,562 ft.
Liberty-Independent Oil Co.'s No. 1 J. M. Neal, 3,550 varas from E line and 500 varas from N line of Samuel Strong Sur. S.D. 3,225 ft.
A. L. Maxwell's No. 1 M. D. Hinchliff, 300 ft. from E line and 1,000 ft. from N line of H.&T.C. Sur. No. 150. Location.
Thomas et al's No. 1-A Eicke, 660 ft. from W line and 2,350 ft. from S line of tract in Green Sur. T.D. 5,047 ft.; 6⅝-in. csg. at 5,029 ft.
Turnbull and Irwin's No. 1 Lynott and Buffum, 466 ft. S and E of NW cor. of SE 100 acres of W 400 acres of 856-ac. tract, James Robeson Sur. Tested 5 thribbles of drlg. mud, no S.W. from 7,190-7,350 ft.; T.D. 7,511 ft.

MADISON COUNTY

Texas-New York et al's No. 1, 3,000 ft. E and 1,750 ft. S of NW cor. of J. H. Pearson Sur.
Bldg. derrick.

MATAGORDA COUNTY

Cockburn Oil Co.'s No. 6 Hawkins, 2,600 ft. from NW line, 1,200 ft. from SW line of McCarthy Sur.
Derrick.

Dr. Griffith's No. 1 fee, 3,000 ft. from E line and 3,000 ft. from W line of Wm. H. Bell Sur.
Rig up and S.D.

MONTGOMERY COUNTY

Reynolds Drlg. Co. et al's No. 1 Mrs. Clara B. Stewart, 330 ft. S and E of most easterly inner cor. of 595-ac. tract, John Corner Sur.
Cmtd. 10¾-in. csg. at 825 ft.; T.D. 900 ft.

ORANGE COUNTY

Blue Line Oil Co.'s No. 1 Godwin, Richard Ballew Sur., 300 ft. from E line and 150 ft. from NE line of Godwin 20-ac. tract.
S.D. 2,770 ft.

POLK COUNTY

C. & C. Drlg. Co.'s No. 1 Granbury & Smith, 600 ft. N and 600 ft. W from most western NW cor. of Gulf Prod. Co.'s Graybury & Smith lease, in the Wm. Shadburn Sur.
Location.

Howard Dailey et al's No. 1 Z. B. Knox, 1,450 ft. W and 1,920 ft. S of NE cor. of F. Chairs Sur., 16 miles NE of Corrigan.
S.D. 60 ft.

J. F. Anderson's No. 1 E. L. Duke (O.W.D. D.), 400 ft. from E and 350 ft. from S of SW cor. of P. Michelick 50-ac. lease, Abst. 59, P. J. Mineral Sur.
Waiting on a new mud pump; T.D. 5,304 ft.

Marathon Oil Co.'s No. 1 A. S. Jones, 990 ft. from NW and SW lines of J. D. Thomas Sur.
Location.

Dick Schwab's No. 1 Lynch, 330 ft. out of NW cor. of 200-ac. tract in the George Jameson Sur.
Location.

REFUGIO COUNTY

Cecil Hagen et al's No. 1 Edith Clarkson, 1,736 ft. from N line, 3,820 ft. from E line of J. Coughlin Sur.
Location.

SAN AUGUSTINE COUNTY

Fidelity Exploration Co.'s No. 2 Bryan & Flourney, 400 ft. from No. 1.
Drlg. sandy shale 935 ft.

VICTORIA COUNTY

Texas Co.'s No. 1 Irene Foster, 55 deg. N. 2,900 ft. E, and 34 deg. E, 980 ft. from W of NW cor. of Sec. 10, F.&N.O. Sur.
Abd. 3,100 ft.

WALKER COUNTY

Seaport Oil Co.'s No. 1 W. B. Ross, in SE cor. of an 80-ac. tract out of the Wm. Hodge Sur.
Moving in rig.

WALLER COUNTY

Stanolind O. & G. Co. et al's No. 1 J. W. Tharp, 466 ft. from S and E lines of J. M. Bennett Sur. No. 100.
Coring shale 6,410 ft.

WHARTON COUNTY

Whitehead and Rash's No. 1 C. T. and D. Kountze, 1,320 ft. from N line, 330 ft. from E line of S.A.&M.G. Sur., Sec. 1, Alstr. 328.
Location.

SOUTH LOUISIANA

ACADIA PARISH

Humble O. & R. Co.'s No. 1 American Rice Mills, 660 ft. S and 1,320 ft. W from NE cor. Sec. 27-10s-1e.
Drlg. shale 5,812 ft.

Superior Oil Co. et al's No. 1 A. S. Newman, 2,000 ft. N and 1,120 ft. E of SW cor. Sec. 24-7s-1w.
Rig up.

ASCENSION PARISH

Humble O. & R. Co.'s No. 2 S. Gumbel & Co., 500 ft. southwesterly from No. 1, 275 ft. easterly from road and approx. 475 ft. N of S line of tract, Sec. 33-10s-2e.
Reaming 4,972 ft.

AVOYELLES PARISH

Southern State Pet. Co.'s No. 1 Boyette, 330 ft. N and 330 ft. E of SW cor. Sec. 28-3n-5e.
Rig up.

BEAUREGARD PARISH

Gulf Ref. Co.'s No. 1 Lutcher Moore, 660 ft. from S line, 760 ft. from E line, NE Sec. 25-6s-12w.
Abd. 5,354 ft.

Richardson & Martin's No. 1 Southwest Lbr. Co., SW Sec. 6-5s-12w.

CALCASIEU PARISH

Fohs' No. 1 O. H. Castle, 330 ft. S and 330 ft. W of C Sec. 18-9s-3w.
Coring shale 6,881 ft.

Gulf Prod. Co.'s No. 1 H. Starks et al, 1,650 ft. W and 1,980 ft. S of NE cor. Sec. 26-11s-12w.
Bldg. road.

Humble O. & R. Co.'s No. 1-B Industrial Lbr. Co., 466 ft. N, 1,399 ft. W of the SE cor. Sec. 27-8s-12w.
Drlg. shale 3,247 ft.

Plummer & McDaniels' No. 1 Cockburn-Hood, 1,072 ft. E and 2,400 ft. N of SW cor. Sec. 13-10s-12w.
Drlg. shale 4,887 ft.

Union Sulphur Co.'s No. 1 Powell Lbr. Co., 660 ft. N of No. 1 State, Sec. 12-9s-8w.
Drlg. gumbo 1,357 ft.

Wheeler Oil Co.'s No. 1 Gabbert, 1,322 ft. E and 548 ft. N of SW cor. of Sec. 28-9s-7w.
Drlg. shale 6,460 ft.

EAST FELICIANA PARISH

Thompson Creek Oil Co.'s No. 1 Fannie Noland, 2,600 ft. E and 1,580 ft. N of SW cor. Sec. 70.
S.D. 1,490 ft.

EVANGELINE PARISH

Humble O. & R. Co.'s No. 1 Haas, 1,250 ft. SE of Bayou Nezpique, 466 ft. NE of SW line of Sec. 22-4s-1w.
Drlg. shale 7,134 ft.

CAMERON PARISH

Texas Co.'s No. 10-A State, 16,855 ft. W and 3,270 ft. N of NE cor. Sec. 1-14-9w, in Twp. 13s-9w.
Abd. 6,784 ft.

Texas Co.'s No. 1 Jessen, 1,170 ft. E and 550 ft. N of C Sec. 24-14s-10w.
Fishing 4,563 ft.

JEFFERSON DAVIS PARISH

George W. Strake's No. 1 Calcasieu Natl. Bank, 200 ft. S and E of NW cor. SE NE Sec. 12-9s-6w.
Drlg. 6,476 ft.

Texas Co.'s No. 1 Bayou St. Dennis, 20,907 ft. S, 4,853 ft. E of NW cor. of Twp., Sec. 19-17s-24e.
Building foundation.

LAFOURCHE PARISH

Barnsdall Oil Co.'s No. 3 Harang Plantation.
Drlg. shale 4,770 ft.

Emerald Pet. Co.'s No. 1 Bowie Lumber Co., 4,431 ft. N and 1,632 ft. E of SW cor. Sec. 53-10s-8e.
Drlg. Catahaula formation 5,487 ft.

R. L. Gay, trustee's No. 1 Godchaux, 3,920 ft. N and 1,746 ft. E in common cor. of Lots 34 and 26, Twp. 15s-19e.
S.D. 6,226 ft.

Southern Sulphur Corp.'s No. 1 D. L. Lagraize, 800 ft. E of NW cor. of Lot 7, thence 250 ft. S of Sec. 26-21s-22e.
Spudded and shut down.

PLAQUEMINES PARISH

Venice Corp.'s No. 1 Burras.
S.D. 1,558 ft.

RAPIDES PARISH

J. B. Evers' No. 1 G. Wettermark, 540 ft. S and 520 ft. E, NW cor. NE SW Sec. 35-6n-2e.
Rig up and S.D.

C. D. Loe's No. 1 Barrett, 330 ft. NW of SE line and 880 ft. NE of SW line of Sec. 40-5n-1w.
Rig up and S.D.

ST. BERNARD PARISH

Danciger's No. 1 Battles, 836 ft. N, 2,198 ft. W of SE cor. Sec. 135-14s-14e.
Prepare to run 7-in. csg. 6,001 ft.

ST. LANDRY PARISH

Bailey Gaunce's No. 1 Lewis, 300 ft. N and E of SW cor. of NW of NE of Sec. 29-5s-6e (workover).
Prepare to make D.S. test; T.D. 5,043 ft.

H. J. Weir's No. 1 Declouet, Sec. 108-8s-5e, near Lafayette Parish line and 3 miles N of Ange La Bute Field.
S.D. 2,322 ft.

ST. MARTIN PARISH

Texas Co.'s No. 6 St. Martin Land Co., 660 ft. S and 500 ft. W of NE cor. SE Sec. 17-8s-7.
Drlg. sandy shale 9,650 ft.

VERMILLION PARISH

Moore Bros.' No. 1 Brussard, 350 ft. S of N line, 250 ft. E of W line, NE cor. Sec. 32-11s-3e.
T.D. 4,056 ft.; fishing.

La.-Ark. Wildcats

(Continued from Page 216)

ft. N, 735 ft. W of C, Sec. 7-20-4e.
Set 12½-in. 182 ft.; set 8-in. 777 ft.; drlg. 1,700 ft.

ARKANSAS

ARKANSAS COUNTY

Grand Prairie Realty Co.'s No. 1 Fischer, 200 ft. S and E, NW cor. NE NW Sec. 6-6s-4w.
Drlg. 1,823 ft.

CALHOUN COUNTY

R. J. McMurray's No. 2 Calion Lbr. Co., 330 ft. N and W, SE cor. Sec. 33-15-14.
Moving in rig.

HEMPSTEAD COUNTY

E. A. Austin's No. 1 McWilliams, 300 ft. N and W of SE cor. NW SW Sec. 19-13-23.
S.D. 2,300 ft.

A. H. Bagnelle's No. 1 Trattner & Rhinehart, Sec. 2-13-26.
S.D. 1,992 ft.

F. W. Martin & Co.'s No. 1 Lafferty, 500 ft. N and W S Ecor. NW Sec. 17-14-24.
P.B. to 2,200 ft.

LAFAYETTE COUNTY

Douglas Lawn's No. 1 Camp, 330 ft. S and W, NE cor. SW SE Sec. 14-15-23.
S.D. 2,910 ft.

W. H. Harvey's No. 2 Allen, Sec. 18-19-24.
S.D. 400 ft.

A. H. Tarver's No. 1 Russell, 330 ft. S and W, NE cor. NW Sec. 12-17-25.
Drlg. 2,929 ft.

MILLER COUNTY

Duluth-Ark. Oil Co.'s No. 4 Beck, SE cor. SE SW Sec. 34-15-26.
W.O.S.R. 2,941 ft.

Fitzwater et al's No. 1 Norson, SW cor. SE SW Sec. 20-15-27.
S.D. 3,177 ft.

Ark. Oil, Gas & Ref. Co.'s No. 1 Beck, SW cor. NW SW Sec. 34-15-26.
1,200 ft. oil in hole at 2,920 ft.

King Oil Corp.'s No. 1 C. H. Schroder, 200 ft. N, 330 ft. E, SW cor. SW NE Sec. 24-14-28.
Reaming to bottom 3,020 ft.

Magnolia Pet. Co.'s No. 6 Olivet, 330 ft. S and E, NW cor. NE NW Sec. 3-16-26.
Drlg. 50 ft.

A. C. Roan's No. 1 Frost Est., 150 ft. N and W, SE cor. SE SW Sec. 8-15-26.
Set 10-in. 120 ft.

Thorntree Oil Corp.'s No. 2 E. H. Beck, SE cor. SW SW Sec. 34-15-26.
Set 10-in. 150 ft.; drlg. 3,465 ft.

Lee Timberlake's No. 1 Frost Est., 330 ft. N and E, SW cor. SW SE Sec. 27-15-26.
S.D. 1,275 ft.

John Wrather's No. 2 H. E. Beck, 330 ft. N and W, SE cor. SW SE Sec. 34-15-26.
Derrick.

NEVADA COUNTY

O. F. Whittaker's No. 1 Wesley, Sec. 2-15-20.
Arranging to set csg. 2,070 ft.

OUACHITA COUNTY

F. A. Book et al's No. 1 Arnold, Sec. 24-15-16.
S.D. 2,032 ft.

T. J. Gaughan's No. 1 Cartier, 330 ft. S and E, NW cor. SE SE Sec. 25-13-18.
Rigging up.

T. J. Gaughan's No. 1 Bragg, 330 ft. N and E, SW cor. NE SE.
W.O.S.R.; 1,200 ft. oil in hole 1,369 ft.

UNION COUNTY

Alice-Sidney Oil Co.'s No. 8 Gregory, C NW NW SW Sec. 11-17-14.
Testing 3,386 ft.

Bellevue Corp.'s No. 1 J. M. Gregory, C SE SW NE Sec. 10-17-14.
Set 10-in. 105 ft.; drlg. 200 ft.

J. E. Crosbie, Inc.'s No. 1 E. F. Gregory, 330 ft. S and E, NW cor. NE SW Sec. 10-17-14.
Set 10-in. 112 ft.; drlg. 2,260 ft.

J. E. Crosbie, Inc.'s No. 1 T. E. Adams, 330 ft. S and E, NW cor. SW NW Sec. 11-17-14.
Rigging up.

J. E. Crosbie, Inc.'s No. 1 W. E. Gregory, 330 ft. S and E, NW cor. NE Sec. 15-17-14.
Rigging up.

H. L. Hunt, Inc.'s No. 12 E. F. Gregory, C NW SE SE Sec. 10-17-14.
Rigging up.

H. L. Hunt, Inc.'s No. 9-A J. D. Gregory, C NW SE NE Sec. 10-17-14.
Derrick.

E. R. Henderson's No. 2 Vines, NW cor. SW SE Sec. 29-18-14.
Set 10-in. csg. 82 ft.; drlg. 960 ft.

H. L. Hunt's No. 14 E. F. Gregory, 330 ft. S and W, NE cor. SW SW Sec. 11-17-14.
Derrick.

H. L. Hunt's No. 15 E. F. Gregory, 330 ft. N and W, SE cor. Sec. 10-17-14.
Rigging up.

M. D. Ingall's No. 1 A. J. Perdue, C SE NW SW Sec. 4-17-14.
Derrick.

T. L. James & Co.'s No. 1-A W. H. Perdue, 330 ft. N and W, SE cor. NE NW Sec. 10-17-14.
Coring 3,478 ft.

Jovian Oil Corp.'s No. 1 Perdue, 150 ft. N, 650 ft. E, SW cor. NW SE Sec. 3-17-14.
S.D. 3,522 ft.

Mrs. R. K. Jones et al's No. 1 Davis, 330 ft. N and W, SE cor. NW NW Sec. 28-16-14.
Arranging to set 7-in. 2,755 ft.

Lion Oil Ref. Co.'s No. 10-A Flenniken, 200 ft. N, 630 ft. E, C Sec. 10-16-15.
Comp. pumping 35 bbls. 2,408 ft.

Lion Oil Ref. Co.'s No. 6 H. L. Rowland, 330 ft. S and W, NE cor. Sec. 15-17-14.
Rigging up.

C. H. Murphy's No. 1 Union Saw Mill Co., 330 ft. N, SE cor. NW SE Sec. 29-18-11.
Derrick.

C. E. Murdock's No. 8 J. M. Gregory, C NW NE SE Sec. 10-17-14.
Rigging up.

C. E. Murdock, Inc.'s No. 7 J. M. Gregory, 330 ft. N, 230 ft. W, SE cor. NE SE Sec. 10-17-14.
Testing 3,236 ft.

Reuter Oil Co., Inc.'s No. 1 J. L. Kinard, 330 ft. S and E, NW cor. SE NW Sec. 32-18-14.
W.O.S.R. 2,189 ft.

Geo. L. Pace's No. 1 Union Saw Mill Co., 330 ft. S and W, NE cor. NE SW Sec. 24-18-12.
Set 10-in. 186 ft.

S. H. A. Oil Co.'s No. 3 Taylor, 330 ft. S and W, C Sec. 10-17-14.
Derrick.

S. H. A. Oil Co.'s No. 2 J. W. Taylor, 330 ft. S and W, NE cor. NW SE Sec. 10-17-14.
W.O.S.R. 3,467 ft.

Marine Oil Co.'s No. 1 Townsend, 330 ft. N and E, SW cor. SW NE Sec. 10-17-14.
Coring 3,367 ft.

Skelly Oil Co.'s No. 6 W. H. Perdue, C SE SE NW Sec. 10-17-14.
Comp. flowing 1,659 bbls., 3,359 ft.

Tubal Pet. Co.'s No. 1 Gaddy, 340 ft. N and E, SW cor. SE Sec. 14-17-14.
S.D.; W.O. 2,416 ft.

WOODRUFF COUNTY

L. P. Lively's No. 1 Perkins, 330 ft. N, 360 ft. E, SW cor. SE SE Sec. 5-5n-2w.
Rigging up.

J. N. Watkins et al's No. 1 Upshaw, 330 ft. N and E, SW cor. S WSec. 17-5n-2w.
Rigging up.

MISSISSIPPI

AMITE COUNTY

Mineral Resources, Inc.'s No. 1 Anderson, C NE NW Sec. 14-3n-3e.
S.D. 550 ft.

BOLIVAR COUNTY

White & Jones' No. 1 Ballou, SE SE NW Sec. 17-24n-7w.
S.D. 20 ft.

CLARKE COUNTY

Clarke County Oil Co.'s No. 1 Dora Butler, C SW SW Sec. 15-2n-16e.
Set 10-in. 63 ft.

GREENE COUNTY

United Gas Pub. Service Co.'s No. 1 Greene County School Land, W½ W½ Sec. 16-1n-5w.
Dry and abd. 5,441 ft.

HARRISON COUNTY

Big Ridge Oil Co.'s No. 1 Hinzin, NE Sec. 13-7s-10w.
Set 6-in. 1,060 ft.; testing 1,100 ft.

HINDS COUNTY

Atkins & Hightower's No. 2 Sander, 660 ft. E, 160 ft. N, SW cor. NW SW Sec. 30-6n-2e.
Set 10-in. 750 ft.; drlg. 1,650 ft.

ISSEQUENA COUNTY

Pelican Oil & Gasoline Co.'s No. 1 Martin & Bender, 300 ft. S and E, NW cor. Sec. 11-12n-8w.
Drlg. 3,100 ft.

JONES COUNTY

Snow-Black Pet. Co.'s No. 2 Watson, 520 ft. W, 200 ft. S, C Sec. 24-7n-13w.
T.A. 3,900 ft.

LAUDERDALE COUNTY

Bob Dalton's No. 1 Bounds, Sec. 34-7n-15e.
Set 10-in. 560 ft.; S.D.; W.O.

MONROE COUNTY

P. J. McAlpine's No. 1 Frank Rye, Sec. 15-15s-17w.
Drlg. 2,850 ft.

P. J. McAlpine's No. 1 Crook, 1,090 ft. S 90 ft. W, NE cor. Sec. 15-13s-13w.
Set 8-in. 730 ft.

SIMPSON COUNTY

Berry Corp.'s No. 2 R. T. Berry, Sec. 32-2n-4e.
Tested S.W. 2,050 ft.

WALTHALL COUNTY

Mutual O. & G. Co.'s No. 1 Boyd, SW cor. SW SE Sec. 24-2n-9e.
Partly rigged up and S.D.

WASHINGTON COUNTY

Perkins & Dees' No. 1 Lee, 1,500 ft. E, 500 ft. N, SW cor. Sec. 33-15n-3w.
Set 10-in. 300 ft. and S.D.

WINSTON COUNTY

Jack Vale et al's No. 1 Moody, 713 ft. N, 667 ft. E, SW cor. NW SW Sec. 3-13n-14e.
S.D. 20 ft.

La.-Ark. Proven Fields

NORTH LOUISIANA

CADDO—BLANCHARD

C. W. Brown's No. 2 P. A. Sharp, SE cor. NE NE Sec. 10-18-6.
Running tubing to test 914 ft.

Louana O. & G. Co.'s No. 3 Cushman, SE cor. SW SW Sec. 33-19-16.
Fishing for tubing 928 ft.

CADDO—HOSSTON

Shoreline Oil Corp.'s No. 44 Crystal, 220 ft. S and E of C Sec. 13-21-16.
Derrick.

SABINE PARISH—ZWOLLE

Alexander & Crane's No. 1 Fogman, SE cor. N½ SW NE Sec. 18-7-11.
S.D.; W.O. 2,373 ft.

Ivan A. Allen's No. 1 La. Long Leaf, 330 ft. N and W, SE cor. NW SE Sec. 12-7-11.
S.D. for wtr. 2,120 ft.

Crichton & Co.'s No. 1 Williams, 660 ft. N and E, SW cor. SW SE Sec. 6-7-11.
Testing 2,583 ft.

Dyer et al's No. 1 McCollister, 330 ft. S and E, NW cor. SW NE Sec. 24-7-12.
S.D. 1,100 ft.

Foster & Hartman's No. 1 Bowman Hicks, 330 ft. S and E, NW cor. NE Sec. 10-7-12.
Dry and abd. 2,696 ft.

E. D. Holcomb's No. 1 Porter, 330 ft. S, 230 ft. W, NE cor. SE Sec. 7-7-11.
Pulling liner 2,580 ft.

H. C. Maulding's No. 1 Davis, 350 ft. N and W, SE cor. NE NE Sec. 2-7-11.
Rigging up.

H. C. Maulding's No. 2 DeLatin, 330 ft. S and E, NW cor. NE SE Sec. 3-7-11.
S.D. 2,250 ft.

K. C. Peterson et al's No. 1 Bowman-Hicks, 330 ft. S and E, NW cor. SW NW Sec. 2-7-9.
Derrick down.

W. L. Posey's No. 1 Burkett, 330 ft. N and E, SW cor. NW SW Sec. 10-9-13.
Used acid and testing 1,982 ft.

Spier & Butler's No. 1 Williams, Sec. 24-7-11.
W.O.S.R. 2,825 ft.

Tex.-La.-Ark. Oil Co.'s No. 1 Pickering Lbr. Co., Sec. 3-3-12.
Recmtd. 10-in. 134 ft.; T.D. 2,210 ft.
S.D. 2,742 ft.

EAST TEXAS (BORDER COUNTIES)

CASS COUNTY

Broderick & Calvert's No. 2 Cagle, H. Cunningham Sur.
Set 10-in. 200 ft.; coring 3,680 ft.

HARRISON COUNTY

W. T. Boyd's No. 1 Rudd, John McWilliams Sur.
Dry and abd. 2,460 ft.

R. C. Payne et al's No. 1 Lowery, E. D. Spain Sur.
P.B. to 3,524 ft.

MARION COUNTY

Ed S. Holman's No. 1 Henderson, R. Bennington Sur.
Fishing for csg. 2,385 ft.

PANOLA COUNTY

R. H. Davis' No. 1 Wooten Est., Winnie Mann Sur.
P.B. to 2,100 ft. and drlg. plug.

Givens & Holloway's No. 1 Wooten est., Winnie Mann Sur.
T.A. 2,153 ft.

R. W. Price's No. 1 Crawford, J. A. Williams Sur.
Set 10-in. 64 ft.

Fred Stovall Drlg. Co.'s No. 1 H. D. Ivey, P. Martin H.R.S.
S.D. for csg. 1,980 ft.

Thomason Drlg. Co.'s No. 1 Cadenhead, Jas. Smith Sur.
Rigging up.

SHELBY COUNTY

Cliff Stovall's No. 1 Pickering Lbr. Co., C. H. Patterson Sur.
S.D. 1,463 ft.

O. P. Bush, trustee's No. 1 Pickering Lbr. Co., P. W. Harvey Sur.
S.D. 250 ft.

ALABAMA

CONECUH COUNTY

Ray L. Eastabrook's No. 1 Miller Mill Co., W½ NE Sec. 1-4n-12e.
Derrick.

COVINGTON COUNTY

Geometer Prod. Corp.'s No. 1 Culbreath, SW cor. SW NE Sec. 8-2n-14e.
Derrick.

HOUSTON COUNTY

Rice O. & G. Co.'s No. 1 Oakley est., SE cor. NW SW Sec. 9-3n-29e.
S.D. 2,440 ft.

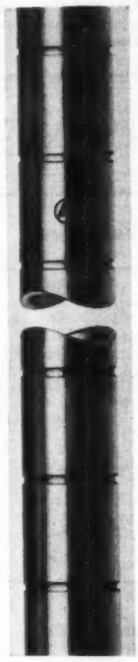
LAMAR COUNTY

DeSoto O. & G. Corp.'s No. 1 Gardner, Sec. 22-15s-16w.
S.D. 4,182 ft.

NEW AND IMPROVED EQUIPMENT

Axelson's Latest Offering Is Grooved Steel Plunger

As companion to the Axelson Superservice hardened steel liners, the Axelson Superservice hardened steel grooved plungers are now offered by the Axelson Manufacturing Co., Vernon Station, Los Angeles, Calif. It is asserted that many difficulties encountered in pumping from deep production zones can be handled successfully by the installation of these plungers.

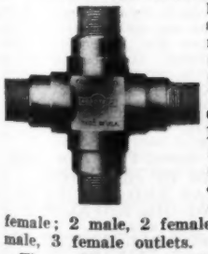


According to Axelson engineers, the plunger was developed to meet a demand on the part of oil company production men and engineers. A need for pump plunger equipment of a higher type, to be used in conjunction with the improved Axelson liners, had been expressed, and after careful study and research, the company is introducing this special molybdenum nickel analysis steel, treated under automatically recorded and controlled temperature equipment. Reports on these plungers from both the California and Mid-Continent Fields are said to indicate they are giving satisfaction.

The new plungers incorporate a series of grooves designed materially to reduce the friction, increase production and improve the sealing effect of the fluid between liners and plungers. These plungers are made to the diameters required for rod and tubing sectional liner type pumps.

Kerotest Introducing New Line of Male-End Crosses

Forged steel male end crosses for test pressures up to 6,000 pounds per square inch and working pressures up to 3,000 pounds per square inch are now being manufactured by the Kerotest Manufacturing Co., Pittsburgh, Pa. They are available in four styles, 4 male outlets; 3 male outlets and 1 female; 2 male, 2 female outlets, and 1 male, 3 female outlets.



These Kerotest products are drop forgings, pressed and hammered to shape in special dies. All threads are full smooth threads machined to A.P.I. line pipe gauges, insuring perfect joints and freedom from leaks. Complete specifications are given in the new forged steel bulletin recently issued.

Two bulletins, one on Worthington Monobloc centrifugal pumps and the other on Worthington single-stage volute centrifugal pumps, are ready for distribution by the Worthington Pump & Machinery Corp., Harrison, N. J.

Among the Equipment Houses

Howard Coonley, president of the Walworth Co., was re-elected president of the American Standards Association for 1935.

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A. J. Wadhams, manager of development and research for the International Nickel Co., Inc., has announced the addition of David M. Curry to his staff. Mr. Curry will devote his time to development work in the nonferrous casting field.

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Macwhyte Co., Kenosha, Wis., announces that the Betz-Pierce Co., Cleveland, Ohio, is now distributor for Macwhyte wire rope and will carry a complete stock, including the preformed and internally lubricated wire rope.

—

Harry M. Green has been appointed manager of mechanical goods sales, Pacific Coast division, by United States Rubber Products, Inc.

—

The Sivyer Steel Casting Co., Milwaukee, Wis., has appointed W. V. C. Jackson, National Bank of Tulsa Building, Tulsa, as its representative for the Tulsa district on refinery equipment.

—

The Maintenance Engineering Corp., Houston, Tex., has been appointed exclusive representative for Wilson-Snyder pumping equipment in the Gulf Coast area. The Wilson Supply Co. of Houston continues as exclusive distributor in that area of Wilson-Snyder slush pumps, oil country pumps, and accessories.

The American Meter Co. has appointed A. McW. Wolfe assistant manager of its Boston factory, the Nathaniel Tufts Meter Works.

—

The Tubular Service Corp., which stocked mechanical tubing made by Steel & Tube, Inc., of Cleveland, Ohio, in warehouses in New York, Philadelphia and Boston, has begun to carry stocks of Electrufite boiler tube in its warehouses in New York and Philadelphia.

—

Neil C. Hurley, president, and J. F. Roche, vice president and operating head of the Binks Manufacturing Co., 3106-50 Carroll Avenue, Chicago, announces formation of the Binks Manufacturing Co. of Canada, Ltd., with offices in Windsor, Ontario, to handle Binks spray paint finishing systems and Binks water cooling systems.

—

The Fullerton Oil Co., on its lease at Montebello, Calif., will install 27 pumping units, all made by the Waukesha Motor Co., Waukesha, Wis. Another order for 15 pumping engines to be shipped to South America has been placed with Waukesha by the Standard Oil Co. of New Jersey.

—

C. C. (Jelly) Harwell and Rex Parks, both of Oklahoma City, have established the Harwell-Parks Machine Co., with a shop just south of Ada, Okla., on Highway 48. The new company is equipped to handle oil field and welding work.

Men Well Known in the Equipment Field

E. H. Eddleman, more commonly known as "Cap", and for the past year connected with the Planning and Coordinating Committee in Washington,

E. H. EDDLEMAN

joined the International Derrick & Equipment Co. on November 1, 1934. He will make his headquarters in Dallas, and will have supervision of sales in the Mid-Continent and Gulf Coast territory.

The International Derrick & Equipment Co. with plants in Columbus, Ohio; Beaumont, Texas, and Torrance, Cal., is a subsidiary of the International-Stacey Corp. of Columbus, of which L. J. Brown is president and R. R. Bloss, vice president. Mr. Brown took over the management of the business in 1932 when the companies went through a reorganization.

Enables Pyrometer Users to Check Potentiometers

The Brown Instrument Co., Philadelphia, Pa., announces a new portable potentiometer designed to enable pyrometer users to check their potentiometers, millivoltmeters and thremocouples quickly and accurately.

The combination of a step-switch and slide wire makes it possible to read the indicating scale to .01 millivolts over a total range of 71 millivolts. This step-switch and slide wire combination is equivalent to having a slide wire 109 inches long. The indicating scale is 17 inches long, making the smallest scale division (.05 mv) over one-sixteenth inch in width.

A fully enclosed, suspension-type galvanometer is used. Having a very short period (approximately two seconds readings can be taken rapidly, as the galvanometer responds immediately when dial is moved to a new position. Two sets of binding posts and a toggle switch, provided for thermocouple checking, further facilitate taking check readings quickly and accurately.

The potentiometer circuit has been designed primarily for checking pyrometers and thermocouples. In addition, this new portable potentiometer can be used as a measured source of E.M.F. in checking recording potentiometers of the self-balancing type. The circuit draws only 3 milliamperes from the dry cell, giving the dry cell a life of several months and permitting the instrument to be used for several hours on one standardization of the battery current.

General Refractories Co., Philadelphia, Pa., has appointed Collinwood Shale Brick & Supply Co., Cleveland, Ohio, as dealer-agent in the Cleveland area.

Oil Equipment Supply Men Adopt An Official Emblem

The American Petroleum Equipment Suppliers' Association, said to include practically the entire industry in the United States of which the name is descriptive, has adopted an official emblem to be displayed exclusively by members.

It is expected at association headquarters in Houston that this emblem, reproduced here, will come into wide use in members' trade-paper advertising, catalogs, stationery, etc.

The emblem readily identifies members of the association and signifies their adherence to the code of fair trade practices and business standards which the association is sponsoring. Members have been quick to see the value of displaying the emblem and already it is appearing in the printed matter and advertising of numerous leaders in the supply field.

The emblem is furnished to members for a nominal sum and is supplied in electrotype form. Two standard sizes have been adopted, of approximately three-quarters inch and seven-eighths inch diameter. Both sizes are available for one or two-color printing. The emblem was designed by Robert R. Berry.

New Line of Gate Valves Is Announced by Jenkins

Jenkins Brothers, 80 White Street, New York, announce several additions to their line of bronze gate valves, including inside screw, traveling spindle patterns with screwed and flanged ends, for various working pressures. Figures 47 and 48 are for 125 pounds steam or 200 pounds oil, water, or gas. Figures 49 and 50 handle 150 pounds steam or 225 pounds oil, water, or gas.

These new gate valves have many features designed to assure long service. Among them are: All bonnet threads are in contact with the spindle at all times whether open, closed or intermediate. Body is cast of Jenkins electric furnace bronze, liberally proportioned, and has free passages. Guides cast in body keep wedge in line for perfect seating, and when valve is fully open the wedge is entirely out of the line of flow.

A double-forced solid wedge and precision machined seating surfaces assure tight closure. An extra deep stuffing box holds more packing and makes a tight joint with less friction on the spindle. Valves can be repacked under full pressure when in the fully open position.

Lord Greenway Passes; Anglo-Persian Founder

Lord Charles Greenway, one of the founders and former chairman of the Anglo-Persian Oil Co., died at Romsey, England, December 16. He was 77 years

LORD GREENWAY

old. It was he who persuaded the British government in 1914 to provide enough additional capital to prevent the Persian oil concession falling into foreign hands.

Sir Charles Greenway was popularly known in the British press and in the public mind as "the oil king." As one of the founders and head of the Anglo-Persian company, he was a prominent figure in world oil operations.

He was a vigorous opponent of the efforts of American concerns to engage in the development of the oil field in Mesopotamia. He characterized such efforts, in a public address a few years ago, as "plain Bolshevism, camouflaged as the 'open door'." Serious political as well as economic motives were read into Sir Charles' speech because his company is controlled by the British government through stock ownership.

He took a prominent part in the development and well-being of Persia. His interest in Asiatic affairs was first deeply aroused when he went to India in 1885, remaining in that country for 23 years. Upon his return to England in 1908 he took an active part in banking and commerce.

Sir Charles was created a baronet on May 20, 1919, and was raised to the peerage as Baron Greenway on January 18, 1927.

Administrator's Report on Crude Oil Stocks

WASHINGTON, D. C., Dec. 22.—Stocks of domestic and foreign crude at the close of the week ended December 15 totaled 324,260,000 bbls., a decrease of 1,710,000 bbls. from the total of 325,970,000 bbls. on hand at the end of the preceding week, Harold L. Ickes, Secretary of the Interior and administrator of the code of fair competition for the petroleum industry, announced today. This decrease, which followed a decline of 787,000 bbls. during the previous week, comprised decreases of 1,537,000 and 173,000 bbls. in domestic and foreign crude stocks, respectively.

Current reports of the industry indicate that crude oil production continued to increase, the daily average for the week ended December 15 being approximately 2,490,000 bbls., as compared with an average of 2,437,000 bbls. for the previous week. Daily average imports were 54,000 bbls., or 27,000 bbls. below the average of the previous week. Crude runs to stills continued to increase, the daily average for the week being about 2,545,000 bbls., an increase of 55,000 bbls. over the average for the week ended December 8. The approximate daily average balance of crude oil for the week ended December 15 was as follows (barrels): Production, 2,490,000; imports, 54,000; decrease in stocks, 244,000, equals runs to stills, 2,545,000; exports fuel and losses, 243,000.

CRUDE PETROLEUM STOCKS REPORTED BY COMPANIES HOLDING 100,000 BBLS. OR MORE

Grade of crude oil—	Stocks held by reporting companies Dec. 8 (bbls.)	Dec. 15 (bbls.)
Pennsylvania Grade	4,595,000	4,567,000
Other Appalachian	1,022,000	975,000
Lima-N.E. Indiana-Michigan	1,154,000	1,340,000
Illinois-S.W. Indiana	11,429,000	11,507,000
N. Louisiana and Arkansas	9,770,000	9,861,000
West Texas and S.E. New Mexico	30,322,000	30,100,000
East Texas	30,674,000	30,544,000
Other Mid-Continent	152,853,000	152,072,000
Gulf Coast	18,473,000	18,263,000
Rocky Mountain	27,545,000	27,475,000
California	35,106,000	34,602,000
Total domestic crude	322,843,000	321,306,000
Foreign crude	3,127,000	2,954,000
Total crude	325,970,000	324,260,000

Among Gulf Coast Drilling Contractors

(Continued from Page 209)

000 feet to salt water. At 3,300 feet it was reported to have had 9 feet of oil sand. Gulf Refining Co. is said to hold considerable acreage in the area, as well as Sun Oil Co. and Texas Co.

Cron & Gracey are rigging up to dig a deep well for the Shell Petroleum Corp. in the Roanoke, Louisiana, Field. This makes two contract rigs in the field for Shell, the other being a heavy rig of Smith & McDannald. One of the Shell's rigs is at present drilling below 9,400 feet in this field.

DEATH OF MRS. C. G. DORN

Mrs. Harriett McConnell Dorn, wife of Clayton G. Dorn, prominent oil producer in the Bradford-Allegany Field, died at her home in Bradford, Pa., Thursday, December 21, after a long illness. Deceased was the mother of Forest D. Dorn, president of the Forest Oil Corp., of which company Clayton G. Dorn was treasurer. One daughter, Mrs. W. Frank Miller, also survives. Funeral services were held Saturday.

CECIL COUTTS DIES

CHATHAM, Ontario, Dec. 22.—A recent cablegram from Burma reported the sudden death there of Cecil Coutts, for many years a driller in foreign fields. Born in Kent County, Ontario, 45 years ago, Mr. Coutts went to India 14 years ago, and has been associated in the East with the Burma Oil Co. and the Anglo-Persian Oil Co. He revisited Canada last in 1933. Four daughters survive.

In Netherlands East Indies

View of engine room at Djamboe Pump Station. This station is located in Sumatra between the producing fields and the refinery of N.V. Nederlandsche Koloniale Petroleum Maatschappij, subsidiary of the Standard Vacuum Oil Co.

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Sell in the most active area in the United States—The Permian Basin of West Texas and Southeastern New Mexico. From the standpoint of royalty investors this area has much to offer. Can supply you with choice non-producing royalties located on geophysical highs. Also drilling blocks, close in acreage to production, or wildcat leases. I maintain my own field men who cover this area for me. Complete set of Forms and Reports for filing with Securities and Exchange Commission accompanies every order. Inquiries Invited.
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6,800 ACRES Government Oil and Gas Permit land between Stanolind well in 30-21-30 E., and Wills well in 10-23-30 E. Both wells now drilling (Big Eddy Dome) Eddy County, New Mexico. Will place operating agreement with reliable operator at an attractive figure. Have other good holdings to offer in Southeastern New Mexico.
OLEN F. FEATHERSTONE,
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Oil Industry Printing

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Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Incorporations

CHARTERS—Delaware best, quickest, cheapest, most liberal. Free forms. Colonial Charter Co., Wilmington, Del.

DELAWARE CHARTERS—Fees small; submitted forms. Chas. G. Guyer, 901 Market Street, Wilmington, Del.

CLASSIFIED ADVERTISING

For Sale—Equipment

3-INCH LAPWELD TUBING—Large quantity 3-inch, long collar, best grade, Lapweld Tubing—both regular and upset. Material still on original lease location and may be purchased at sizeable saving before it is moved into stock. For details contact Wichita office.

UNION TOOL ROTARY WITH DRILL PIPE—Complete 6-inch "Union Tool" Rotary with 125-h.p. and 115-h.p., 250-lb. W.P. Boilers; 12x12 Ideal Twin Cylinder Drilling Engine; 12x6¾x16-inch "Johnson Gumbo Buster" Mud Pumps; 3,500 feet of 6⅝-inch Drill Pipe; and all other necessary equipment. Very favorable price on this rig. Located at Pampa, Texas. Can also furnish other types and makes of complete rotaries. Tell us the type of work and the territory and we will furnish information on what we have suitable for the work.

2-INCH LINE PIPE—25,000 feet of extra good 1,800-pound test 2-inch, 11½-thread Line Pipe ready for delivery from Houston yards. Also have ample quantities of good used 2-inch on hand at various points throughout the territory, and can make quick delivery to any location in Kansas, Oklahoma and Texas.

ENGINE CLUTCH—Straightway, type R.B. "Weber" Clutch complete with outboard bearing and all operating parts. Has been completely overhauled and has new shaft. Wichita stock.

ROTARY DRAW WORKS—B-3,000, "Lucey" Horizontal 3-speed Roller Bearing Draw Works complete with steel foundation, guards, braces, header boards, brake equalizer, chain, and American Automatic Cathead. First class condition in all respects and priced right, f.o.b. Houston.

SUPERIOR GAS ENGINE—35-h.p., 4-cycle, Superior Gas Engine complete with standard equipment and type c-11 Reversible Clutch, overhauled and in first class operating condition. Ready for delivery from Houston stock.

CABLE TOOL DRILLING ENGINE—12x12 Acme Ajax Drilling Engine with outboard bearing, balance wheels, rims, etc. Overhauled and operates like new engine. Chase, Kansas, stock.

WEBER GAS ENGINES—Several completely rebuilt 40-H.P., 2-cycle, Type M, Weber Gas Engines with flywheels, bronze bushed enclosed type Reversible Clutch and 14-in. face by 18-in. diameter Belt Pulleys. These engines are all ready to go to work and can be depended upon to operate satisfactorily. Can be delivered anywhere.

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HIGH PRESSURE STEAM PUMPS—Several 10x3x10-inch Gardner-Denver "Line Type" High Pressure Duplex Steam Pumps, Type EXT. Maximum fluid end operating pressure 1,500 pounds. Especially designed for heavy mud pumping service or for handling heavy fluid. One each in stock at Wichita, Oklahoma City, Houston, Pampa.

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THE PURE OIL COMPANY
MUSKOGEE, OKLAHOMA.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also, large stock of lathes, pipe machines, milling machines, etc. Send for our list.

Terms to suit.

CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St. Cincinnati, Ohio.

5—80 HP BESSEMER GAS ENGINES, type 8, direct connected to 14"x20" compressors. Price $600.00 each. Bloomington, Kansas.

2—85 HP WATT-MILLER direct connected vacuum pumps, shop numbers 1825 and 1826, power cylinders 13"x20", vacuum cylinders 18"x20". Price $400.00 each, Elgin, Kansas. 25 HP and 35 HP Bessemer Gas engines at price of $250.00 each, at Elgin, Kansas.

SONKEN-GALAMBA CORPORATION
64 No. 2nd St. Kansas City, Kansas.

IMPROVED N-Sullivan Core Drilling Machine completely equipped for rotary drilling for shallow production. Address Box G-470, The Oil and Gas Journal, Tulsa, Okla.

KEYSTONE Driller, size 5½, equipped with new McCormick-Deering Gas Engine also tools. Price right. Stumpff & McFaull, Box 1123, Texarkana, Tex.

FOR SALE OR TRADE—Line Pipe, Casing, Engines, Oil Field Equipment. LEE MORRISON SUPPLY CO., Bartlesville, Okla.

FOR SALE—120 foot Steel Parkersburg Derrick. Also 96 and 122 foot Derricks, all new timbers. New and used 4 inch tool joints and other Oil Field Equipment. SHAWNEE OIL FIELD SUPPLY CO., 120 S. Harrison, Shawnee, Oklahoma.

Business Opportunities

PARTNER WANTED—An independent company manufacturing only high grade lubricating oils and greases, owning their own production, refinery and sales need $25,000 for development. For particulars address Box G-472, The Oil and Gas Journal, Tulsa, Okla.

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Tulsa, Oklahoma

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Two or three 4,500 or 6,000 gallon, three-compartment tank cars with coils. Address Box G-471, The Oil and Gas Journal, Tulsa, Okla.

WANTED—Skid type winch, suitable for tubing, rod, and sand pump work on wells 500-1,000' deep; prefer outfit with folding A mast; cash. Oko Oil and Gas Co., Iola, Kansas.

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BUY LAND—2½ acres, clear deed, for $75, $5 down, $5 month, in California's next prospective oil and gas field. Well down 660 ft. now. Kimbrough, 729 San Fernando Bldg., Los Angeles, Calif.

NEW MEXICO—My weekly scout report furnishes complete and reliable information on New Mexico developments. Send for copy. W. S. Patterson, Santa Fe, N. Mex.

ATTENTION OIL MEN

You may see a demonstration of our Geo-Physical instrument, that has located hundreds of oil and gas wells. Men who are interested in drilling, buying and selling royalties and leases, can protect their investments by using our survey and mapping service. We indicate depths, pay sands and if oil or gas. We have several drilling blocks, mapped and leased, on which we can make satisfactory deals with interested parties. Our services can be had for cash or working interests.

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FOR SALE—40 Acre lease San Juan Co., N. M. Blanco field, Sec. 36, Twp. 30n, R. 9w. Sacrifice for quick sale, $100 per acre. Presley Guio, 406 West Sixth St., Los Angeles, Calif.

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110 A. new oil lease 15-3s-9e, Atoka County, best offer. 114 NW Seventh St., Oklahoma City, Okla.

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JAMES E. MILLER CO., 207½ E. Third St., Tulsa, Okla., will co-operate with responsible parties seeking aid in financing projects of higher order.

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WANTED—Oil Accountant with experience in handling income taxes. State age, education, experience and enclose photograph. Address Box G-480, The Oil and Gas Journal, Tulsa, Okla.

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Refinery maintenance-cost engr., tech. grad., 13 yrs. exp. Now in east, go anywhere. Avail. Dec. 1. Address Box G-442, The Oil and Gas Journal, Tulsa, Okla.

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